The Early Kachemak Phase on Kodiak Island at Old Kiavak

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Abstract

This site report describes excavations from 1963 on Kodiak Island, Alaska, and defines an early local phase of the Kachemak tradition called the Old Kiavak phase. Information remains insufficient to fully describe this phase as well as the third and fourth millennium B.P. occupation at the site owing to poor recovery of organic artifacts and a very sparse inventory from the earliest levels. Comparisons with other Early Kachemak components found on Kodiak Island and elsewhere show considerable variation within the tradition. The local Old Kiavak phase represents the early to middle time range of the Kachemak tradition and is part of a more broadly defined Early Kachemak regional phase.

Radiocarbon dating of the Old Kiavak site indicates that occupation extends from 3400 B.P. or earlier, but with several periods of abandonment. There is little temporal gap between the Kachemak tradition at Old Kiavak and the antecedent Ocean Bay tradition (which is barely present). The succeeding Late Kachemak phase, found elsewhere in the area at Three Saints, began about 2200 B.P. and probably extended to about 900 B.P. No discrete Late Kachemak occupation is recognized at Old Kiavak, although judging from styles of artifacts recovered, the possibility of minor use of the site during this phase cannot be excluded. The site was reoccupied approximately seven or eight centuries ago, but remains from this early Koniag tradition occupation tend to be patchy and mixed with materials of the main, Old Kiavak, phase. At the north flank of the site are additional Koniag deposits and a housepit, possibly from full Koniag tradition times. Between A.D. 1500 and 1800, late Koniag occupation was focused in a large village located a hundred metres from the Old Kiavak site. Finally, there was late historic seasonal occupation of the site mound from approximately A.D. 1890 to 1910.

Few data from Old Kiavak bear on the Early Kachemak-Ocean Bay succession, but evidence for technological continuity from the Ocean Bay to the Kachemak tradition has been found at Site AFG-088, located on Afognak Island of the Kodiak group. The transitional complex is tentatively called the "Afognak phase." Radiocarbon dating indicates that this phase began about 3400 or 3500 B.P. (uncalibrated age), slightly earlier than the Old Kiavak phase, although the two may overlap temporally. The seven millennia of cultural continuity accorded to Kodiak history and prehistory have an important bearing on the past of the northern North Pacific region as well on Eskimo origins.

Résumé

Ce rapport décrit les fouilles archéologiques de 1963 à l'île Kodiak, en Alaska. On y retrace une phase ancienne locale de la tradition Kachemak appelée «le Kiavak ancien». Il manque d'information pour décrire correctement cette période de même que l'occupation d'Old Kiavak aux troisième et quatrième millénaires avant ce jour. La maigre cueillette d'artefacts organiques et un inventaire épars des niveaux plus anciens en sont la cause. Des comparaisons avec d'autres assemblages du Kachemak ancien trouvés à l'île Kodiak et ailleurs montrent d'énormes variations à l'intérieur de la tradition. Le Kiavak ancien local représente les périodes ancienne et moyenne de la tradition Kachemak et fait partie d'une phase régionale du Kachemak ancien plus largement définie.

La datation au carbone 14 de sites du Kiavak ancien en fait remonter l'occupation à 3400 avant ce jour ou encore plus tôt, avec cependant plusieurs périodes d'abandon des sites. Peu de temps sépare le Kiavak ancien (de la tradition Kachemak) de la tradition précédente Ocean Bay (à peine décelable). La phase tardive du Kachemak qui a suivi, que l'on retrace dans la région à Three Saints, a commencé aux environs de 2200 avant ce jour et s'est probablement poursuivie jusqu'à 900 avant ce jour. Il n'y a pas d'indication d'occupation discontinue à Old Kiavak durant le Kachemak tardif, quoique l'on ne puisse exclure la possibilité d'un faible usage du site à cette époque, si l'on en juge par le genre d'artefacts recueillis. Le site a été occupé à nouveau il y a environ sept ou huit siècles, mais les vestiges de la tradition Koniag ancienne sont épars et ont tendance à se confondre avec les matériaux de la phase principale, le Kiavak ancien. Du côté nord du site se trouvent des dépôts et une fosse d'habitation qui pourraient dater du moment où la tradition Koniag battait son plein. L'occupation Koniag tardive, entre 1500 et 1800, a eu lieu dans un grand village situé à cent mètres d'Old Kiavak. Enfin, il y a eu une occupation saisonnière historique et tardive du monticule du site de 1890 à 1910 environ.

Peu de données du Kiavak ancien portent sur la transition entre les traditions Ocean Bay et Kachemak ancien, mais on a découvert des signes de continuité technique d'une tradition à l'autre sur le Site AFG-088 de l'île Afognak, qui fait partie des îles Kodiak. Le complexe de transition est provisoirement appelé «phase Afognak». La datation au carbone 14 fait remonter cette période à 3400 ou 3500 avant ce jour (âge non étalonné), légèrement plus tôt que le Kiavak ancien, bien que les deux périodes aient pu se chevaucher. Il y a un rapport fondamental entre les sept millénaires de continuité culturelle qui caractérisent la préhistoire et l'histoire de Kodiak et le passé de la région septentrionale du Pacifique Nord de même que l'origine des Esquimaux.

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CONTEXT OF RESEARCH

The Project

During the early 1960s the Aleut-Konyag project of the University of Wisconsin, excavated several archaeological sites on Kodiak Island, Alaska (Fig. 1). Previous work on Kodiak Island consisted primarily of Smithsonian Institution excavations and surveys done during the 1930s (Heizer 1948, 1956; Hrdlicka 1944). Work subsequent to the Aleut-Konyag project includes investigations at the mouth of the Afognak River (Clark 1979) and various agency projects. In the 1980s, and continuing to the present date, significant excavations and surveys were made in the Karluk area and at Uyak Bay and elsewhere on Kodiak by the Kodiak Archaeological project initiated by Bryn Mawr College and continued at the University of Alaska (Jordan and Knecht 1988, Knecht 1995, Knecht and Jordan 1985, Steffian 1992), by P. Hausler-Knecht in Ocean Bay culture sites at Chiniak, R. Knecht on Afognak and the contact refuge islet site on Sitkalidak Island, Patrick Saltonstall and Katharine Woodhouse-Beyer at Koniag and historic sites on Afognak in the context of the Afognak Native Corporation "Dig Afognak" project, and Ben Fitzhugh on Sitkalidak Island and at Old Harbor (for a history of research to 1990 see Clark 1992a).

These investigations have described a prehistory of 7000 years duration (Table 1). At the base, pending discovery of antecedents, is the Ocean Bay tradition which began with flaked lithics and the use of microblades. During its span Ocean Bay lead to the development of a distinctive ground slate industry. About 3500 BP (3800 or 3900 BP calibrated years) Ocean Bay was followed by the Kachemak tradition--a basic northern North Pacific sea-mammal hunting and fishing culture. It was followed, in the second millennium AD by the Koniag tradition that leads to the historically-known inhabitants of Kodiak Island. The Koniag tradition is noteworthy for its dual complexion as a south Alaskan maritime culture, continuing in the mode of its Kachemak antecedent, and a Neoeskimo culture. Uncalibrated C-14 dates are used in the text; calibrated age is given in Table 6 and a complete list of calibrated dates (to 1993) is provided by Mills (1994).

The long-lived Kachemak tradition was described first in the 1930s at Kachemak Bay in outer Cook Inlet by Frederica de Laguna (1934, 1975). Lower Levels material from Kodiak Island recovered by the Smithsonian excavations at Uyak Bay, also during the 1930s, called "pre-Koniag," (Heizer 1956, Hrdlicka 1944) are recognized as being closely related to the Kachemak Bay components. Renewed excavation by the Aleut-Konyag project provided a further basis for periodizing or subdividing this tradition as it is represented on Kodiak.

The Kachemak tradition had a duration on Kodiak in the order of 2700 years. Temporally, the Old Kiavak phase from the Old Kiavak site, appears to account for both the early and middle portion of this time range. The majority of the collection evidently pertains to the middle years. "Early Kachemak" will be used as a regional phase for the broader coeval south Alaskan context inclusive of the Old Kiavak local phase

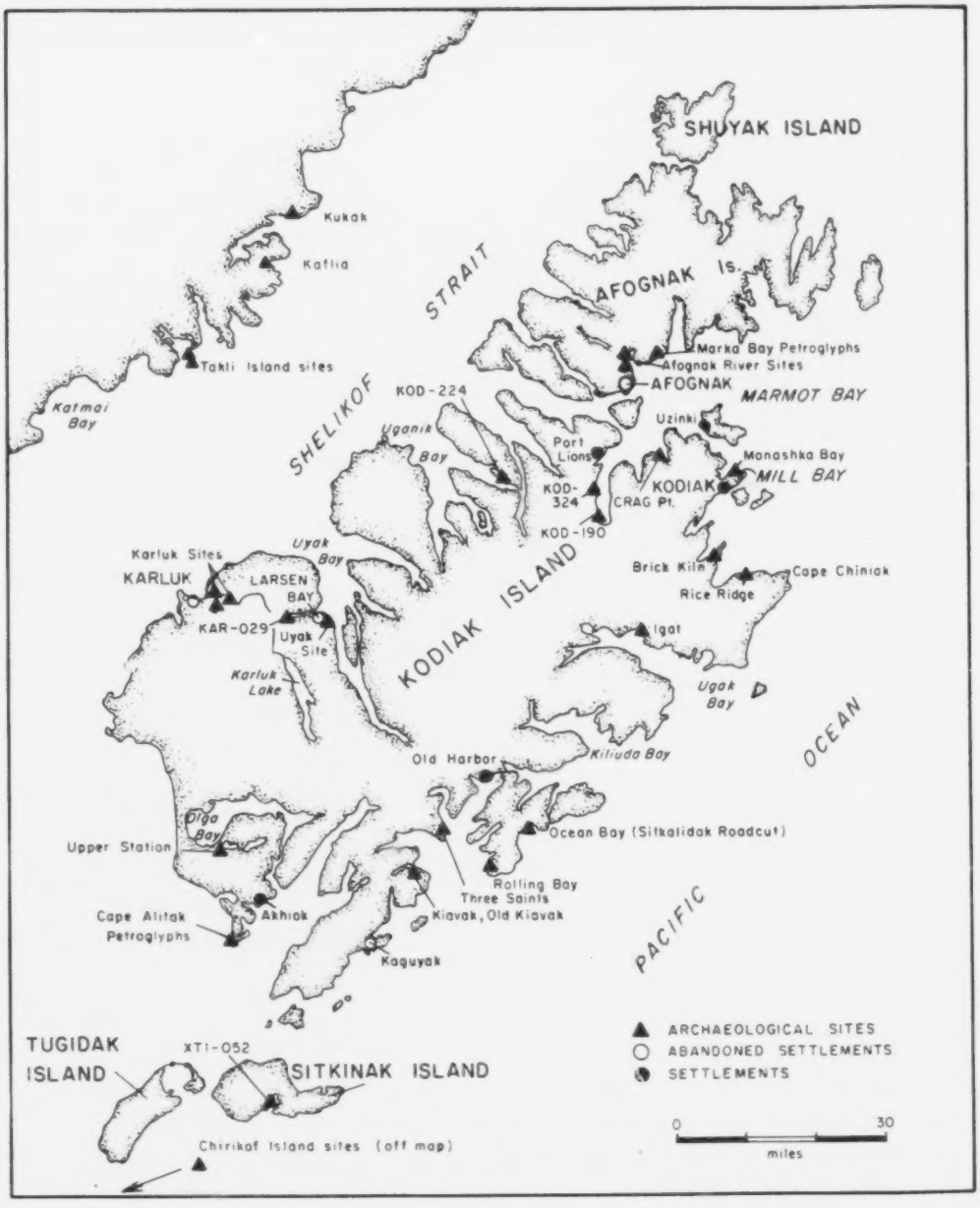

Figure 1. Map of Kodiak Island showing the location of selected archaeological sites.

TABLE 1. CULTURAL SEQUENCE ON KODIAK ISLAND[1]

Date	Traditions and Phases	Characteristics
	KONIAG TRADITION[2]	
1763	Historic Alutiiq	Russian contact and conquest
	Koniag Phase (Late, Developed, Early)	Prominent wood-working industry Highly developed ceremonialism Large villages & large chambered houses Focus on salmon; Petroglyphs; Pottery
AD 1300 (700 BP)	Kachemak-Koniag transition	Sweat bath rubble, Koniag pottery (local) and Kachemak style artifacts co-occur
800 BP	**KACHEMAK TRADITION**	
	Late Kachemak (regional phase) *Three Saints* (local phase)	Strong evidence of trade with mainland Ritual artifacts including modified human bone Art prominent Variable ratio of ground slate to chert tools according to local phase
2200 BP		
	Early Kachemak (regional phase) *Old Kiavak* (local phase) *Afognak Phase* (local phase)	Abundant fishing weights (Late and Early) Toggle harpoon and labrets appear Less elaborated than Late Kachemak Cobble industry (spall tools, etc.) Ocean Bay/Kachemak transition
3500 BP		
	OCEAN BAY TRADITION	
	[Intrusive Arctic Small Tool tradition]	
	Ocean Bay II	Prominent ground slate industry based on linear sawn and scraped blanks. Fine eyed needles suggest gut rain parkas
	Ocean Bay I *Takli Alder* (Alaska Peninsula)	Red ochre floors Flaked chert industry Microblades & slotted points Stone lamps. Prismatic blades
7000 BP		

[1] Inasmuch as the sequence is essentially continuous the criteria and dates for phase divisions may differ among researchers. The Ocean Bay I/II distinction centers on the strength of the ground slate industry. The long duration of Ocean Bay I is subject to partitioning, especially if earlier components become known.

[2] Usually referred to as the Koniag phase because of its short duration. The tradition designation parallels the other traditions, recognizes that the Koniag was truncated, presumably prematurely, by historic contact, and accommodates subdivision into phases.

(later components of the tradition thus belong to the Late Kachemak phase). Stylistic evidence suggests that the Three Saints, Crag Point, Old Karluk (KAR-31), and Uyak site components on Kodiak are largely Late Kachemak. This has been born out by Late Kachemak radiocarbon dates that start about 2200 BP. This periodization, placing the better known components into the Late Kachemak phase, leaves the early half of the Kachemak tradition to be accounted for. The main Old Kiavak site occupation largely fills that gap. Although the work there was done more than 33 years ago, it has been published only at a preliminary and summary level (Clark 1966a, 1996) and the results have yet to be fully superseded by further research. From a wider perspective, the present paper is intended to help provide an understanding of the origin and early development of one of the major building blocks of Pacific Area prehistory.[1]

Summary of Site History

Old Kiavak is a multicomponent site (Table 2), although it displays poor separation of occupations The principal occupation is Early Kachemak. The results presented here have been subjected to a certain amount of prior analysis in order to separate these components. The site, KOD-100, was recorded provisionally in the field as Site 20 and initially was published as Kod-419 (Clark 1966).

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[1] The 1963 field season extended from June 17 through September 2 and included work on Chirikof Island and at Ocean Bay as well as at two Kiavak sites. Professor William B. Laughlin had overall charge of the project and visited it at Kiavak Bay. Crew members, in addition to the writer, were Norman Bauer, Becky Sigmon, William Workman and Diena VanEynsbergen.

This report was drafted in 1987 on the basis of artifact descriptions written in 1967 and stale field notes. It submitted to Dr. Richard Jordan for a volume of papers on Alaskan North Pacific area research, but withdrawn in 1988-89 in favor of a shorter manuscript that did not require a large commitment to tables, figures and plates. For the plates, I visited the University of Wisconsin, Madison, in November 1993 to do the photography. At that time I also reexamined several specimens to check my earlier descriptions. My work there was facilitated by Drs. James B. Stoltman and Herbert Maschner. In 1994 and 1995 I examined additional collections in Alaska, conferred with local archaeologists, and collected samples from sites on Kodiak Island in preparation for the discussion and conclusions presented here. Afognak estuary site AFG-088 was reinvestigated then with the logistical support of the Afognak Native Corporation.

Preparation of this report, travel to the University of Wisconsin in 1993, and several radiocarbon determinations have been supported by the Canadian Museum of Civilization. David Laverie drafted the map and feature drawings. Olga Luvsandorzh drew the artifacts in Figures 24 and 25 from a series of photographs.

TABLE 2. OCCUPATIONAL COMPONENTS AT OLD KIAVAK

Component Identification & Details	Date (uncalibrated)
Camp with permanent shelters	*c* 1890--1910 AD
Area unoccupied	*c* 1820--1890 AD
Adjacent younger Kiavak site visited by Lisianski in 1804	*c* 1500--1810 AD
Koniag phase, on low part of site not investigated.	Undated; period of younger Kiavak site?
Early Koniag, ceramic facies	*c* 600 or 700 BP
Early Kachemak, main Old Kiavak component	
Main occupation	*c* 3000 BP--2200 BP
Low artifact density zone	*c* 3400 BP--3000 BP?
Ocean Bay? Streaks in substrate sands	*c* 4700 BP

Hunters and fishers camped sporadically at the site as early as 5000 BP, evidently to exploit salmon, sea mammals and shellfish congregated at the outlet of shallow inner Kiavak Bay. They were responsible for the rare artifacts and charcoal streaks found in the sand below the nominal base of the site deposits.

Beginning about 3400 years ago a small settlement had become established on the spot. Houses were built, and stone and clay were hauled in for hearths, ovens and other facilities. The earliest deposits, in what has been termed the "impoverished" zone contain few implements and the matrix is largely sand. Whether sand simply "diluted" the anthropogenic matrix or whether housekeeping habits dictated that refuse be deposited elsewhere (on the shore?), resulting in the low frequency of artifacts, remains to be determined. At the time these deposits were formed, the site probably fronted directly on Kiavak Bay, prior to formation of the outer bar and tidal entry that now separate the site from the bay.

Around 3000 BP the mode or intensity of occupation changed. Now, stones, kitchen midden and more numerous artifacts were being deposited. Houses continued to be built, judging from the presence of clay and stone features. Near the beginning of this period at least one very large housepit was dug through the impoverished deposits into the substrate sands. Historically, the adjacent Kiavak village was a winter-season or permanent village, and so too evidently was Old Kiavak. These sites are located close to the open outer coast which could have supported winter subsistence hunting and gathering.

Occupation continued through the centuries until about 2200 BP (estimated). Conveniently, but probably coincidentally, this break in occupation falls at the end of Early Kachemak times and the beginning of Late Kachemak times. Late Kachemak people could have visited the site, sporadically, during the first millennium AD but evidence for this is not clear from the limited excavations. However, the site was reoccupied in the first half of the second millennium AD. The extent of this early Koniag occupation is not clear because in most areas of the site Koniag deposits are not stratigraphically distinct from earlier deposits and there are indications of considerable mixing with older material. In some cases Koniag artifacts were found as deep as 75 cm but earlier Kachemak-style artifacts occurred in the top 25 cm of deposits. Koniag occupation may have continued on a lower area of the site only sampled by the minor test Trench D. The soil of late Koniag deposits is distinctively brown, and contains much whale bone, while the underlying black stratum evidently is of Early Kachemak genesis. The late occupation is poorly dated.

Captain Lisianski visited the locality in 1804 and found a thriving settlement, Kiavak, located on outer shore terrain across the shallow tidal entry less than 100 m from Old Kiavak. The younger site probably was abandoned not long thereafter (Clark 1974a), but about 1890 or 1900 AD people returned to the area and built shelters on top of the Old Kiavak mound. At this time, and for the next couple of decades, the site evidently was a seasonal outpost.

The Site and Vicinity

Old Kiavak is located on Kiavak Bay, 112 km by air southwest of the town of Kodiak on the outer oceanic side of Kodiak Island in the western Gulf of Alaska. The mounded portion of the site runs nearly perpendicular to the present shore and measures nearly 20 by 50 m (Fig. 2-5). Adjoining one side is a less elevated area of about the same size with thinner refuse deposits.

Today Old Kiavak does not front directly on open Kiavak Bay (see Clark 1974 for description of the environs). Instead, sand and gravel bar deposits occupied by the younger site intervene. The site faces a shallow tidal entry separating it from the outer bars and the younger Kiavak site. Low-lying flats surrounding the older site support a growth of beach rye (*Elymus*) and sometimes are inundated by storm-driven high tides. There has been some erosion at the face of the site, and this accounts for numerous artifacts found along the short reach of shore there. The lowest occupation layers or charcoal streaks extend under the shore outward from the present face of the site.

Immediately south of the site, towards the head of Kiavak Bay, there is a broad swift tidal channel. The channel rounds the end of a long spit that partitions the bay into shallow inner and broad, deep, outer portions. Thousands of years ago the inner bay, where the water now is one fathom and less, may have been a strand flat. But at an even earlier time the whole bay on either side of the spit was one body of water and sea cliffs were cut well back from the present shore. One end of this line of cliffs is seen behind the Old Kiavak site (Fig. 2-3). The channel localizes the movement of spawning salmon, especially pink salmon and

Figure 2. The younger Kiavak site, with the Old Kiavak site in the background, from the air.

Figure 3. The flank of the site, looking south towards the head of Kiavak Bay. Elderberry shrubs enhance the mounded elevation.

Figure 4. The end of the site, seen looking southwestward from the younger Kiavak site.

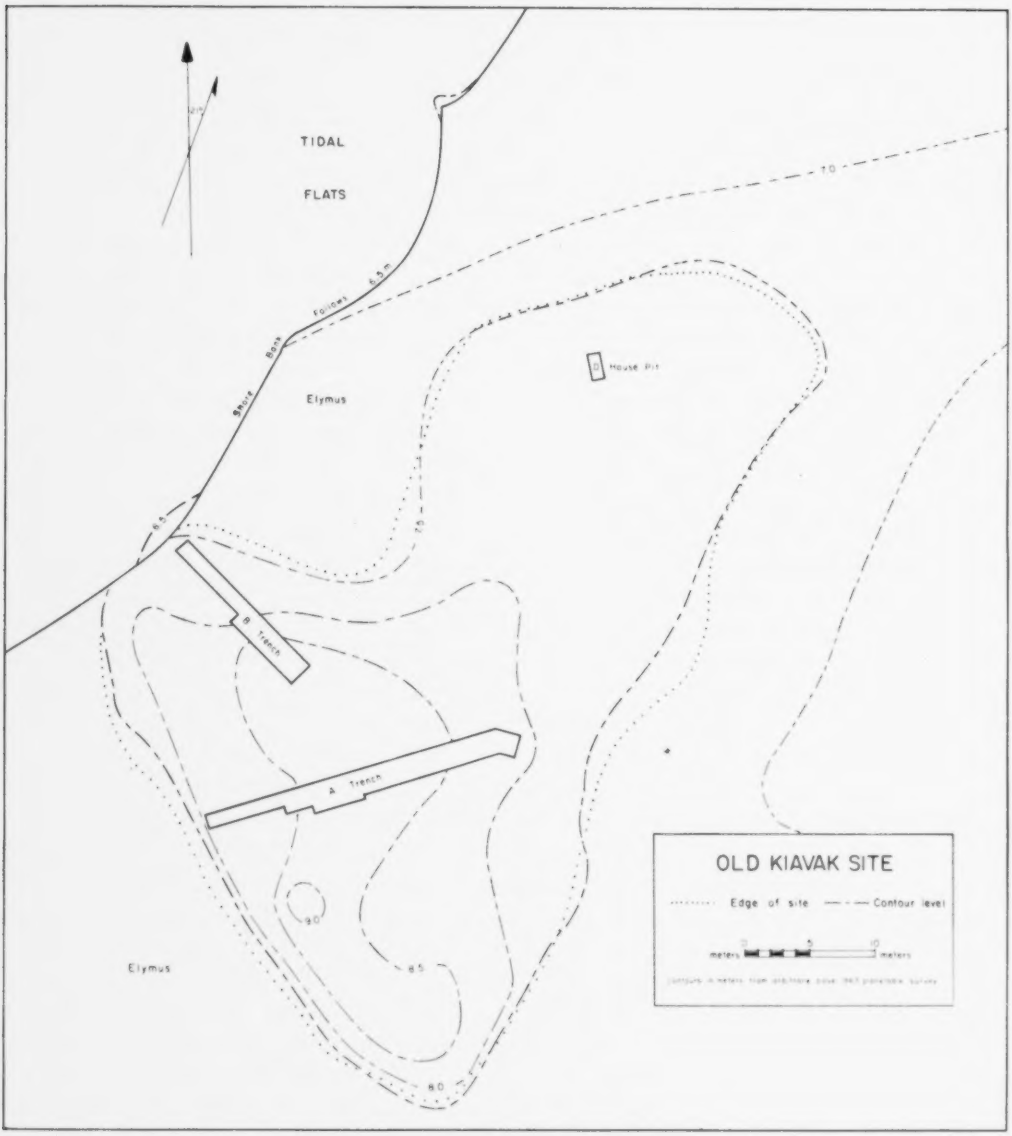


Figure 5. Map of the Old Kiavak site.

harbor seals that pursue the salmon so they pass by the site. Today gravel exposed at low tide at the mouth of the channel provides anchorage for abundant sea urchins, blue mussels, and dungeness crabs that feed on the mussels. Kiavak Bay moderately indents the coast of a larger embayment known as Sitkalidak Strait, where whales, sea lions, ocean bottom fish and sea birds would have been accessible.

Although the site mound looms above surrounding flats by 2 to 2.5 meters, the terrain actually has subsided. Whether the subsidence is local, or is regional, and whether it occurred during early prehistoric time or later has not been determined. There also has been subsidence in the region at Three Saints Bay, but the site there again is located on unconsolidated deposits. In this case there is a record of subsidence during the early historic period. During higher high tides water rose in the deeper sections at Old Kiavak, seeping in from the sides and rapidly draining as the tide fell. On the occasion of a moderately high 9.3 foot tide water rose in Trench A (described below) to an elevation 29 cm lower than the sea water in the inlet at the front of the site. Interestingly, this was fresh water, charged from the flow of rain and meltwater into deposits that fan out from the valley inland from the site. A stream enters Kiavak Bay nearby, joining the tidal channel, but during dry weather the flow is completely underground and no freshwater is available on the surface within a couple kilometers of the site. The depth of flooding is indicated on the stratigraphic profile, Figure 10. Possibly the site was flooded and consequently vacated during periods of high tides, and the location only was occupied because of the lack of other suitable terrain at an optimum locality for harvesting food resources. Storm-driven tides overriding the site could account for the apparently natural occurrence of water-worn pumice in the sand at the base of the site. Nevertheless, considering that some elevation above sea level would have been needed to place a camp above the reach of waves raised by storms (especially prior to formation of the outer bar or younger Kiavak terrain) it is obvious that Old Kiavak terrain could not have been occupied at the current elevation of the deepest cultural traces. There must have been at least one meter subsidence since people first lived at the locality. Additional details are given below.

The base of Trench B slopes gently towards the present inlet, indicating that the settlement originally was built on a slightly elevated, rising deposit, as is common to shores that face sandy beaches from which sand is blown inland (Fig. 13). Almost all of the nominal base of Trench B was below the level of a 10.5 foot tide, by as much as 45 cm at the shore end of the trench. Charcoal streaks from even earlier use of the site occurred to a depth of 70 cm below that tide level (Level observations were made for a 9.4 ft tide, to which 1.1 ft was added inasmuch as 10.5 tides--and higher when driven by the strong winds of equinoctial storms--occur two or more times a year in the area.).

The nominal base of Trench A, which reached the middle of the site mound, varied between 40 cm above and 40 cm below the 10.5 ft tide level. The deepest charcoal streaks and traces of occupation, where a stone lamp was recovered, dipped to as much as 80 cm below that tide level. The disturbed hearth of a structure depression (Fig. 17) was 60 cm below the 10.5 ft tide level. It is unlikely that the effort would have been expended to construct this large house if it was going to be awash and possibly destroyed twice a year.

Two trenches (TrA, TrB) were excavated into the main mound and an additional small test consisting of two one-meter sections (TrD) was made in the lower area of the site (Fig. 5). Trench A was 2 m wide and 24 m long; Trench B was 1 m wide over half its length, elsewhere 2 m wide, and was 12 m long. Excavation was done by 25 cm levels, though attention also was given to following natural streaks or stratigraphic boundaries. Deposits reach a maximum thickness of 215 cm, although traces of occupation were found in the underlying sand to a depth of 240 cm. The matrix consists of small fractured rocks in dark gray, soily, charcoal-laden sand. The lowest levels are especially sandy. There was one band of kitchen midden that evidently had been dumped into a large housepit. Small patches of shell were found elsewhere at various levels, but organic preservation generally was very poor. Excavators repeatedly noted occurrences of bone mush from refuse and, in at least one case, from a human burial. One can surmise that some bone implements also have disintegrated. Relatively pure bodies of coarse stone rubble appeared in the upper part of the site and are attributed to Koniag tradition steam baths. Several stone slab and clay features also were uncovered.

The site was not as productive as had been desired, primarily owing to poor bone recovery. Moreover, deposits turned into a charcoal-laden muck when wet. For that reason, part of the effort I had intended to invest in this site was diverted to the adjacent, better drained younger (late Koniag) Kiavak site. The substrate consists of a combination of shoreline and fan deposits from the valley south of the site. The sandiness of the lower Old Kiavak phase zone, coupled with the presence of deeper charcoal-stained streaks, may indicate that during the first millennia of its occupation the site was receiving large increments of wind-blown sand from an adjacent beach.

Research Problem--Sought and Achieved

We did not intentionally select Old Kiavak to excavate as an Early Kachemak occupation, i.e., select Early Kachemak as a research focus. In 1961 the Aleut-Koniag project excavated at Rolling Bay in a ceramic Koniag site that documented the last centuries of prehistory. The next season, in 1962, the project worked at the Three Saints site. The Three Saints occupation was seen to fit what subsequently we have called Late Kachemak. Differences between the two were sufficiently great that it did not take a great deal of study to see that there apparently was a gap in the sequence. To bridge these phases, and to demonstrate either transition or the sudden succession of ethnic groups was a primary research goal for 1963. In dealing with related materials from the Uyak site, excavated in the 1930s, Hrdlicka had proposed that "the disappearance of the Pre-Koniag [Kachemak tradition] stock was evidently both sudden and complete, and not due to either an epidemic or a final local massacre.... It would seem that, probably from fear, they abandoned the site and moved off; and the choice site was taken over by the Koniag people" (Hrdlicka 1944:230). From the outset of its publication this conclusion was challenged as being unlikely, and it was pointed out (cf. Heizer 1956) that Hrdlicka's crude recording methods could have obscured transitions in both prehistoric technology and in the physical form (cranial shape) of the prehistoric inhabitants of Kodiak. Hrdlicka thus set the problem orientation--Koniag origins--for the next phase of work on the island.

Thus, while the results of the 1961 and 1962 seasons bracketed the problem, it was necessary to focus on the period between, missing from the two sites then excavated. We knew that to solve the problem we needed to find the Kachemak-Koniag succession in a single continuously occupied site. We arrived in the field in 1963, set up a temporary camp adjacent to the Three Saints site and started to survey the Sitkalidak Strait region for a site with the requisite research potential. The Old Kiavak site, located next to a younger site earlier reported by Hrdlicka (1944:118-119), appeared to meet this requirement. We committed ourselves to that site on the basis of limited testing and surface collecting which had demonstrated the presence of a Koniag tradition component with ceramics and a Kachemak tradition component. However, an anguishing problem developed during preliminary analysis of the collection. The Kachemak tradition component at Old Kiavak clearly differed from that at nearby Three Saints. The two seemed to belong to different phases. From somewhat imprecise information available at that time it appeared that the Three Saints phase was the younger, and the Old Kiavak phase the older one. Yet, in the Old Kiavak deposit there was no physical break between the Old Kiavak and Koniag occupations to mark a break in the history of the site. I concluded, though, that there was in fact an unobserved hiatus. Radiocarbon dating has shown this assessment to be correct.

In this paper two prehistoric phase components are described (Table 3), but with an emphasis on the main, earlier Old Kiavak phase (a local phase of the Early Kachemak phase of the Kachemak tradition). Ubiquitous artifacts common to both are described conjointly, cobble spalls for instance. An historic occupation from about 1900 AD also is noted briefly. The report concludes with a discussion of the Early Kachemak phase in its local and broader aspects. The excavations contribute nothing to the original problem of Kachemak-Koniag succession, but may bear, instead, on the question of Kachemak origins.

LATE HISTORIC OCCUPATION

Sod outlines, shallow rectangular depressions, and posts remain from several small historic huts that occupied the central area and southwestern end and side of the site. These probably were one-room, pole-framed, driftwood and sod-covered huts of the type locally called barabaras. Most of one structure floor was removed by the inner end of Trench B. Koniag pottery was found in the wall of the same depression, which may mean that the historic hut was built inside an earlier Koniag housepit. At least two additional structures are present on the site inland from Trench A. The exact number was not determined because the site was not cleared of the vegetation that hindered observation of surface features. The greatest concentration of historic items occurred at the inner end of Trench B and nearby in the southwestern five sections (10 m) of Trench A (Fig. 6). Only a few historical items were found over the northeastern half of Trench A, and none in Trench D and the outer three-quarters of Trench B. The absence of artifacts in the latter area, close to the water and edge of the site, poses the question of whether there was a water-front activity area at the historic camp. Information taken from the headstamps of rifle and shotgun cartridges, kindly researched for me by James VanStone and, in the case of a Kynoch cartridge, by Robert Pammett, indicates that most of the cartridges were first manufactured in the decade or two before 1900 but some date shortly after 1900 AD. The camp likely was occupied during the first decade of the present century, possibly also during the preceding decade.

The Late Historic component was regarded as overburden and no aspect of research was oriented to this late occupation of about 1890 to 1910. Nevertheless, by the time this report reaches the reader nearly a century will have passed since these huts were erected on the Old Kiavak mound. They may be of interest as an empirical aspect of local oral history. Recovery of approximately 180 items plus faunal remains from a small portion of the occupied surface indicates that the site has a further potential to yield artifactual data and other information on the turn-of-the-century outcamp. The collection from the historic component is listed below. It would be appropriate to draw this information, and in particular the artifact data, into an interpretation of the activities, gender and age makeup, and season of occupation. I feel, though, that it would be premature to do that given the potential that exists to obtain more comprehensive collections from the surface of the site through controlled recording. In addition, there may remain unrecorded local knowledge pertaining to the site. The recovery of 107 fox bones from the thin brown superficial soil and turf associated with this component indicates that at one activity undertaken here was fox trapping.

List of Historic Artifacts

Items not marked with an asterisk were discarded at the field camp across from the site.

Iron Objects
Spoon fragment
"Tin" lid
Wire nails, 35, some large
Rectangular shank nails, 6, observations failed to distinguish between early cut nails and modern boat-building nails.
Spikes, 9, round shanks
Spikes, 2, square shanks with offset head (like railroad spikes)
Spike, 1, square shank, 18 cm long, galvanized, subrectangular head
Spikes, 19, other square shank up to 23 cm long, some broken
Lag screw, 20+ cm long
Bolts with washers and square nuts, 2, 10 cm long
Iron scrap and strap fragments, 10 pieces
Oarlock holder
Wire loop *c* 8.5 cm in diameter, wire looped into a 3-strand ring, and then the strands wound around the ring.
3-sided (triangular) files, 2, modern format 17 and 20 cm long
Claw hammer head, short highly curved claws, high head round in section and flat on top
Circular escutcheon plate with 2 holes for screws (from a door?)
Velvet tobacco can, pocket format with scratch strip on base, printed details readable
Tea kettle with base that fits into stove top when stove lid is removed
Tea kettle fragment
Skillet, cast iron* (Pl. 1g)
Iron blade with long curled handle, like 18th century razor, probably a specialized knife (Pl. 1k)
Large pot
Object resembling a lid
Barrel hoop
Hinge fragments, 2; a large galvanized hinge also seen attached to a post
Sprinkler or sieve formed from punching many small holes into a small flat rectangular can (sardine tin, A6-1.3).* The can has a heavily soldered seam, as is characteristic of the period.

Metal not Iron. Many of these items have been recycled.
Spheroidal brass button, delicate floral design incorporates a humming bird*
Scrap of rolled brass
Top or lid, dome-shaped, sheet brass, altered and mangled* (Pl. 1l)
Cupped discoidal sheet brass object, cut in half, wrinkled and splitting, in concentric rings, 13 cm diameter
Harpoon head, brass, 13 cm long, with 2 unilateral barbs and line hole, format like Koniag bone harpoon heads* (Pl. 1h)
Rifle cartridge 38-55, KYNOCH, 1; 38-55 caliber introduced by Ballard and thereafter by Winchester and others, with Winchester marketing to the present time; Kynoch cartridge in production near Birmingham in 1902.
Rifle cartridge 30-30, W.C. CO., 3, *c* 1900 to present; same U.S.C. CO, 1, probably marketed after 1900* (Pl. 1b)
Rifle cartridge 30-30 U.S.C.CO.
Rifle cartridge 40-82, W.R.A. Co.; W.C.F., 1 ea, popular for Winchester Model 1885, Model 1886 and others* (Pl. 1d)
Rifle cartridge 45-70, W.R.A. Co., 3, service for Springfield rifle from 1873 to 1892; used in other popular rifles.*
Rifle cartridge 45-90, W.R.A. Co; W.C.F., 3, a long-case version of the 45-70 developed for Winchester Model 1886, now obsolete* (Pl. 1c).
Shotgun cartridge, all metal, WINCHESTER, No. 10. 1, manufactured by Winchester around 1880* (Pl. 1e).
Shotgun cartridge base, WINCHESTER, No — 12, LEADER, 1, for smokeless powder loads, probably after 1900.*
Shotgun cartridge base, REM-UMC, No ------ 12, NITRO CLUB; REMINGTON UMC embossed on the side, 2; Nitro Club was manufactured after 1902.*

Ceramic and Glass
Bottle necks, 2, 1 melted
Glass fragments, 15, 1 is a splinter of glass sheet, 1 green bottle glass.
Rectangular bottle, fragmentary, one side reads: Surft's; other side reads: SEATTLE (plus unclear word).

Glazed ceramics, 20 sherds from at least 2 dishes; white; some, probably from a single ironstone bowl, have a delicate light-rose, green and gray floral print design of a rose bramble.*

Fabrics and Footwear
Black (wool?) fabric in good condition, 2 pieces
Leather boot lower portion, small, inside length 17 cm (6.7 inches)
Iron boot heel (Pl. 11)
Leather boot sole and adjacent parts, large
Rubber boot sole and adjacent parts, large
Rubber, 2 pieces, from boot?
Leather, 2 pieces, from footwear?
Leather, strip, piece of a belt?
Leather, 4 fragments
Lower portion of a rubber boot bearing the following inscription arranged in oval format (Pl. 1j):

++ E. STOUT'S PATENT ++

SNAG PROOF
TRADEMARK

BOOT

MARCH 11 th 1884

Wood
Barrel top section
Barbed prong*
Worked wood, 3 other*

Stone
Indigenous lamps, 3 assoc. with Trench B structure and half a lamp at Trench B that lay on top an iron spike, all recycled from an older component. Not necessarily used as lamps. One was heat altered "burned" and may have been used in a sweat bath or hearth. Another is gobbed with char residue. There may have been an attempt to use it as a lamp (B4-1.15, B5-1, B6-1)* (Pl. 18).
Notched cobbles, 2, from the surface with historic trash, Koniag format, probably reycled from earlier component.*

By Function

Household
- Stone Lamps
- Ironstone ceramics
- Skillet
- Pot
- Unidentified brass lid and sheet fragments
- Tea kettle
- Spoon

Tools
- Files
- Claw hammer
- Object like razor with long spiral handle

Clothing
- 10 different fabric and footwear items
- Button

Food (containers)
- Sardine can
- Barrel parts
- Bottle fragments
- Tobacco can

Construction
- Hinge (attached to post)
- Escutcheon plate
- Spikes and nails
- Lag screw
- Bolts and nuts

Hunting, Procurement, Protection
- Notched cobbles?
- Several types of rifle and shotgun cartridges
- Brass harpoon head
- Wood objects may be trap trigger parts

Transportation
- Oarlock Holder

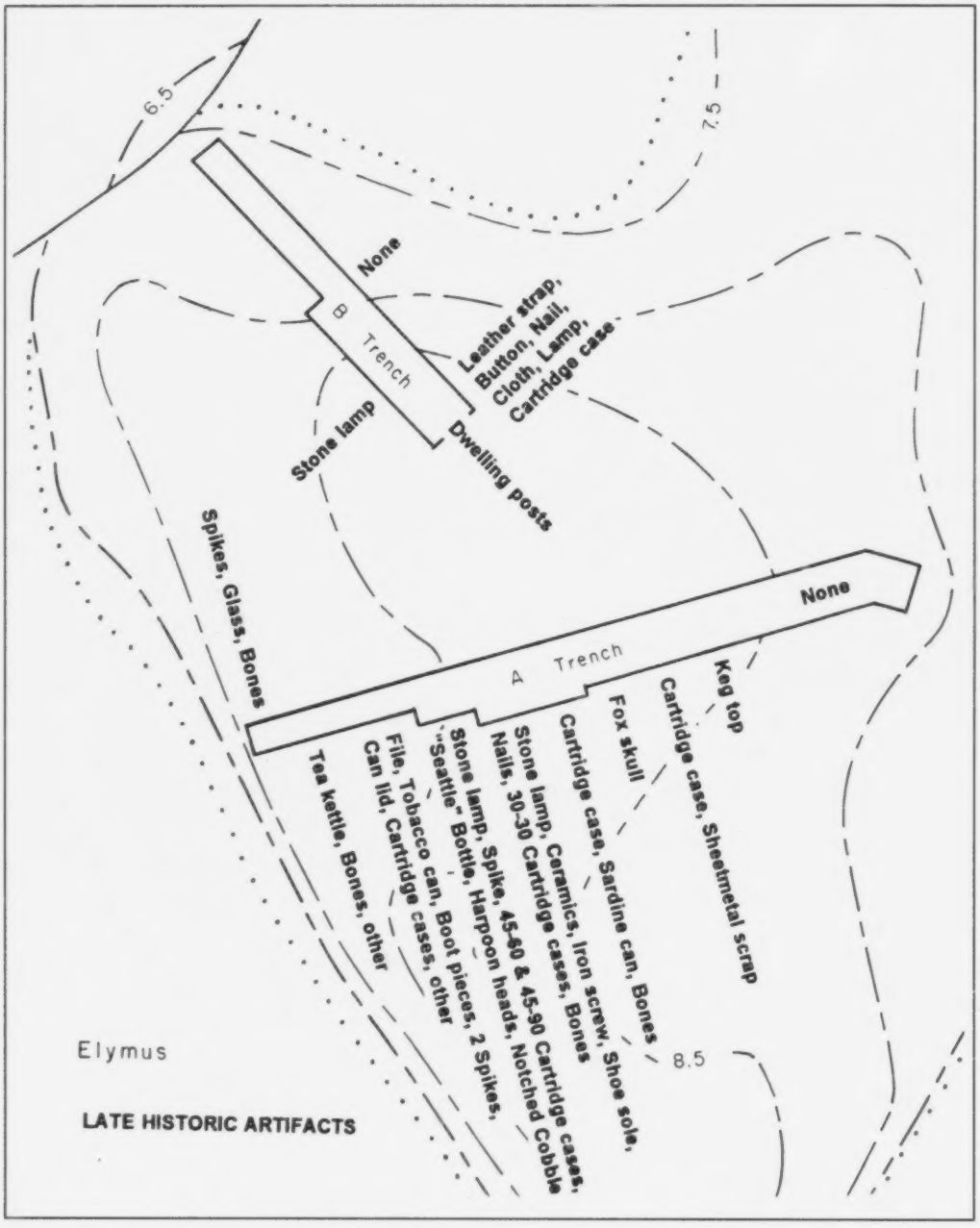


Figure 6. The distribution of historic artifacts.

KONIAG PHASE COMPONENT

Procedural Problems

Given the lack of separation by clear stratigraphic markers, several cautions have to be followed in sorting the Koniag component from the several-fold larger whole-site collection (Table 3). A primary criterion employed here takes into account stylistic and typological differences between Koniag and Old Kiavak phase artifacts. This procedure cannot be followed slavishly lest any transitional component having attributes of both be misinterpreted. An additional consideration is that some of the most common implement styles are ubiquitous. I know of no way to distinguish between Koniag and Kachemak tradition hammerstones, and the distinctions between boulder flake (spall) tools of these cultures are tentative.

Although shallowness tends to correlate with lateness, there are indications of patchiness or unevenness in the Koniag deposits. And there evidently has been mixing due to excavations by late inhabitants of the site. As a consequence, where no determining typological considerations apply, specimens from the top three levels (0-75 cm) are considered to belong potentially to either the Koniag or the Old Kiavak phases.

Pits, now filled with varied deposits, and masses of fire-cracked rock (sweatbath rubble), both attributed to the Koniag phase, penetrate the top three levels and in one case extend into Level 4 (below 75 cm). Pits evidently had been dug into older deposits, and this has mixed occupational components. Burned stone rubble also was discarded into depressions that probably had persisted from the time the site had been abandoned by the Old Kiavakers. In the small Trench D excavation apparent Koniag and Old Kiavak deposits are distinguished by a change with depth from browner to grayer colored layers. Over the main mound, however, dark gray soils extend essentially to the surface and include some Koniag material. Koniag occupation on the Old Kiavak mound apparently was too brief or too sparse to result in the accumulation of any continuous blanket of refuse deposits.

Dating the Koniag Component

The Koniag occupation appears to be predominately early Koniag. Indicators pointing to this conclusion are as follow:

1. No trade goods of the historic contact period were recovered.

TABLE 3. COLLECTIONS MASTER TABLE

Artifact	Koniag (certain)	Old Kiavak (certain)	Undetermined (either/both)
Hunting, Fishing, Gathering			
Toggle harpoon head	0	1	0
Toggle harpoon foreshaft	0	1	0
Harpoon head, nontoggling	0	5	0
Ground slate points	2	13 by type	3 fragments
Flaked points	0	2	1
Notched pebbles	0	109 by type	0
Notched/grooved cobbles	present	12 by type	35
Fish hook shank	0	1	0
Bone gorge or prong	0	1 by type	0
Clam or Root digger tip	0	1	0
Fish hook shank	0	1	0
Tools			
Bone wedges	1	2	0
Awls and similar items of bone	0	4 by level	0
Adze haft	0	0	1
Adze bits	3	8 by type/level	3
Burnishing stone	1?	0	0
Grinding slab	0	1 below base	0
Stone saws	0	2	2
Maul head	0	0	1
Stemmed knife blades	? rare	26 by type/level	19
Ulu blades	2	16 by level	34
Ground slate fragments	present	39 by level	109
Abrasive stones	1	8	15
Hammerstones	2	3 by level	31
Ulu-shaped slate scrapers	present	7 by level	10
Trimmed beach shingle blades	0	41 by type	0
Boulder flakes	present	22 by level	65
Slate fragment scrapers	?	11 by level	39
Other flaked slate blades	?	3	3
Flaked chert/greenstone tools not classified above	0	8 by level	6
Ground slate splinter	0	0	4
Household			

Stone lamps	1	4	11
Pottery	15.3 lb	0	0
Spoon fragment	1	0	0
Ceremonial, Other Artifacts			
Incised figurines	4	0	0
Incised tablet	0	1	0
Labret	1	1	0
Grooved tooth	1	0	0
Natural spheroids	0	+	
ARTIFACT TOTAL	22 + pottery	355	393
Features			
Small clay-lined depressions	absent	present	
Stone slab boxes	absent?	present	
Burials	absent	present	
Assembled boulders	present		
Post holes	present		
Hearth	uncertain	present	
Housepit	Area D surface	As abrupt major dip in strata	
Sweatbath rubble	present	absent?	

Items in the "undetermined" column variously belong to both components. Assignment of an artifact to the Old Kiavak component by level generally means that it was recovered from Level 4 or deeper, though in a few sections some Level 4 items are assigned to the undetermined group.

2. Pottery rims tend to be of simple format (as defined in Clark 1974:116). Pottery rims became complex during very late Koniag times at the younger Kiavak site. However, one complex rim was recovered from a Trench B pot drop (also two from late Trench D deposits).

3. Incised slate figurines are present at KOD-100, though not numerous, but they are absent at the adjacent younger site. This trait evidently fits into a narrow temporal window on Kodiak. Jordan and Knecht (1988) report that incised slate figurines appeared at Karluk soon after the Koniag-Kachemak transition but disappeared before late Koniag times.

4. There is a radiocarbon date on char from potsherds with simple rim outlines, from Trench A. It is in the early Koniag time range, but the date, 937±49 years BP (P-1041, Table 6), cannot be used without adjustment because the char residue probably is sea mammal fat. Arctic cases show that this class of material consistently dates too old, evidently due to so-called marine reservoir effect. Opinions on the exact adjustment vary (Arundale 1981). Such adjustments are sufficiently ambiguous that the present relatively late

date has limited utility. An ocean surface water layer model presented by Stuiver and Braziunas (1993:Fig. 17A, B) results in a correlation of about 515 BP calibrated age or AD 1400-AD 1455 for the one sigma error range, but this should not be taken as an exact age as variations on the model can apply. One variation proposed by Sothan, Nelson and Vogel (1990) would give a 300-year more recent calibration, which they explain by a greater proportion of deep ocean water with older reservoir age occurring in the North Pacific. However, I consider that to be unacceptably young. The marine calibrated date correlates with the end of the Early Koniag phase at Karluk as proposed by Jordan and Knecht (1988). The Koniag occupation sampled by Trenches A and B appears to have been brief judging from the limited accumulation of refuse.

Collections

Undistinguished implements inferred to come from the Koniag component are not effectively segregated from similar items from the Old Kiavak component. These items are described jointly later. Others distinctive to the Koniag phase are noted here. We note, below or in the keys to the plates, when an artifact comes from the small Trench D excavation so that that probable late Koniag occupation can be differentiated from the early Koniag found elsewhere on the site.

Slate Projectile Points (Pl. 4q)

Barbed point. A fragmentary barbed point from Level 1 has a misshapen stem and hollow-ground blade. This is a Pacific Eskimo horizon marker, recovered from Prince William Sound to the central Alaska Peninsula, including Kodiak Island from second millennium AD contexts.

Endblade. A broad, late-style, Level 1 triangular end blade is thinned (faceted) at the butt end. It appears to be unfinished inasmuch as the edges are blunt and the faces are not finely honed.

Bone Wedge (Pl. 2c)

One specimen is recorded for the brown (Koniag) deposits of Trench D.

Adze Bits (Pl. 2a, 8e)

Two thick, nontabular, fragmentary greenstone adze bits come from the upper brown component of Trench D (D1-2.3, D2-1.4) and there are other specimens as likely to be Koniag as Kachemak on the basis of their attributes. The latter include a large, heavy, 770g, 18-cm-long slate bit found near the surface in Trench A (Pl. 2a) and fragment Plate 8a.

Burnishing Stone? (not illus.)

A tabular pebble of soft, green schistose rock has ground facets around the perimeter. Two facets meet forming an oblique chisel-like edge. This specimen, lacking provenience, bears the essential attributes of a common artifact recovered from the younger Kiavak site.

Ulu Blades (Pl. 2f)

The two largest ulu blades are from Level 1 and on the basis of their size likely are Koniag. One of them (not illustrated) has a drilled perforation, done somewhat roughly but with a degree of care more appropriate to the Kachemak tradition than to the Koniag phase. Another fragment is perforated by a saw cut, a mode of perforation sometimes found in late Koniag specimens.

Hammerstones (Pl. 12e)

Two elongate hammerstones with chopper-shaped edges come from the brown stratum of Trench D. Some hammerstones from other trenches also may be from the Koniag occupation.

Stone lamps (Pl. 18)

A large stone lamp fragment, recovered in two pieces, is assigned to the Koniag phase on the basis of its characteristic form. A similar incomplete specimen was found at the younger Kiavak site (Clark 1974: Pl. 43 D-E). Additional lamps of generalized format have an indeterminate or Old Kiavak phase provenience and some were recycled into the Late Historic component, apparently as sweat bath rocks (Table 12).

Pottery (Pl. 7g, Fig. 7-8)

The most diagnostic Koniag artifact is pottery. Generally stated, this is the late coarsely-tempered ware described elsewhere for Kodiak (Clark 1974a; Heizer 1948). Trench B and D each have one representative of a complex rim form (Figure 8 lower left). Complex rims tend to be late. All other rim sherds are simple and include plain horizontal flat rims and slightly expanded or flared horizontal and inclined rims. Excluding a small pot with knob on the base, four vessels represented by substantial rim sections ranged from 18 cm to 32 cm in diameter.

Rim sherds account for 21 or 22 separate occurrences by trench, section and level, and rim shape, while another set of observations accounts for 15 vessels and 13 lots of body sherds by section and level. Rim and body sherds tend to co-occur in the same units. The length of recovered rims is 196 cm, which would account for less than three but more than two large vessels (The small pot noted above would have a circumference of 56 cm, the largest one a 100 cm circumference). It follows, then, that something in the order of 80 to 90 percent of each pot represented either has disintegrated or remains in sections not excavated. Pottery was found widely distributed over all areas of the site.

The small vessel with rounded base terminating in a cylindrical knob (Fig. 7) is nearly unique. The sherds which comprise two-thirds of the pot weigh 510 g. It is 12-13 cm in diameter. This form is reported at the south end of Kodiak (R. Knecht oral communication to the author, 1988). One crumbling sherd of a larger vessel, from the Rolling Bay site, appears to represent this shape (Clark 1974a:119). The typical Kodiak vessel, instead, has a flat base, straight lower walls that flare outward to a relatively sharp shoulder, and vertical or slightly constricted upper walls--a flowerpot shape.

Spoon Fragment (Pl. 1n)

A spoon or scoop fragment from Section D1 Level 2, is made from thin compact bone.

Grooved Tooth (Pl. 1i)

A stubby tooth, ground down and probably once polished across one end, is figured. It is grooved around the circumference. A tooth of this form may come from a brown bear or a walrus. The specimen has not been examined by a zoologist.

Incised Slate Figurine Tablets (Fig. 9)

Four incised slate figurines are like other Koniag specimens (Clark 1964). One not illustrated is a 17.5-cm-long tablet on which the body is formed by eight horizontal bands of herring-bone lines.

Labret? (Pl. 1f)

A very slightly curved, nearly flat, elliptical, 6.2-cm-long bone object has a narrow encircling groove. The closest equivalent to this item is seen among labrets of the Koniag phase (the Level 2 provenience and association with pottery supports Koniag attribution).

Chalcedony (not illus.)

One flaked pebble of waxy-luster colorless chalcedony and another fragment of the same material were recovered from levels 1 and 2 (A2-1.1). Flakes and pebbles of this material are relatively common in Koniag phase deposits, but identifiable implements are extremely rare.

Figure 7. Ceramic vessel with knobbed base (incomplete).

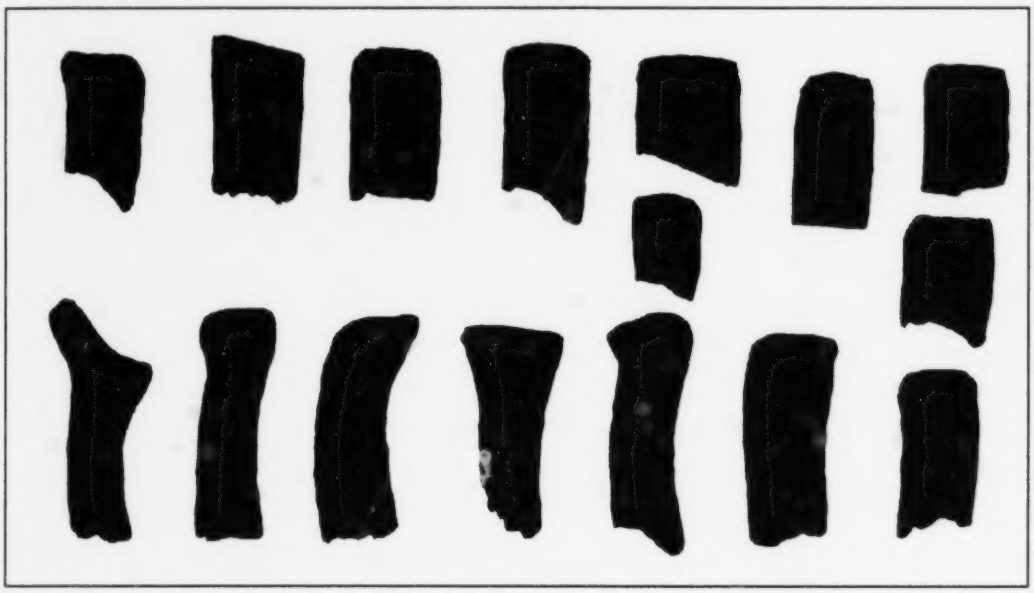


Figure 8. Rimsherd profiles.

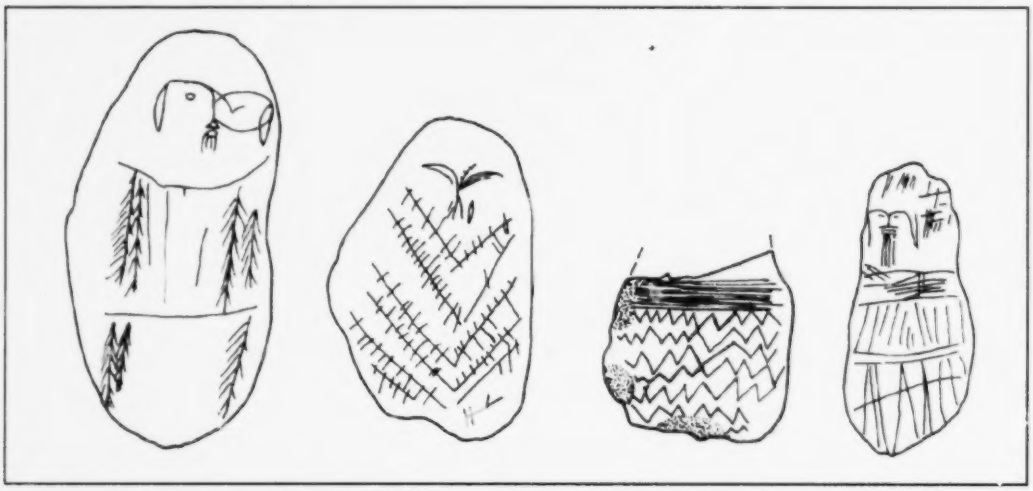


Figure 9. Drawing of incised figurine tablets.

Features

One boulder feature in Section A7 (Fig. 15), described later with those encountered deeper in the site, probably is intrusive from the Koniag occupation. Four widely-spaced boulders found in the first and second levels elsewhere in Trench A may be from a feature that is too diffuse or too incompletely represented for further characterization.

The sweatbath is represented by thin layers and by thicker lenses and pit fills of fire-cracked rock. This sweatbath rubble occurred in the upper levels, often in association with Koniag ceramics and is assigned to the Koniag phase occupation. However, numerous pieces of fire-cracked also were found in some of the deepest features. They may be attributed to hearths and cooking, but the possibility of Early Kachemak sweat bathing should not be excluded.

Discussion

Very few artifacts are assigned to the Koniag phase on the basis of typology alone. However, inasmuch as the Koniag occupation appears to have been patchy, except at Trench D, none is assigned to this phase on the basis of provenience alone other than the few items from Trench D. When all lower and most intermediate level finds are attributed to the Old Kiavak phase, there remain 401 items of unassigned or indeterminate provenience. Many Koniag artifacts probably reside unrecognized among these 401 items.

The very meagre identified inventory provides little information on the early years of the Koniag phase. Some characteristic Koniag-style implements are missing, but given the small sample one cannot justifiably draw conclusions on that basis.

OLD KIAVAK PHASE COMPONENT

This part describes collections and features of the Old Kiavak phase component together with ubiquitous artifacts distributed throughout the site deposit. Artifact distribution as it relates to the stratigraphic history or zonation of the site deposit also is examined. It is concluded that there is not sufficient basis for identifying more than the one phase of the Kachemak tradition. This occupation, nevertheless, persisted for about 1400 years.

Occupational or Stratigraphic Zonation

Three Superimposed Zones of Deposition

Three sequential zones of occupation are present in the Old Kiavak deposit (Fig. 10-13). These are the main artifact bearing zone, the impoverished zone, and the sub-site strata (Table 4). In addition there is a thin brown soil layer at the surface associated with the Late Historic component. In Trench D, it may be possible to distinguish between Koniag and Old Kiavak phase deposits on the basis of a change in matrix color, but generally this differentiation of soils was not found in the areas sampled by Trenches A and B.

First is the 100/125 cm thick zone of abundant refuse deposition. It includes pure Old Kiavak deposits of midden (shell and bone) and stony non-midden composition, mixed Koniag and Old Kiavak phase deposits, and lenses of Koniag sweatbath rubble. Below that there is an artifact-poor sandy zone. These deep levels nevertheless are rich in structural features. The third zone is indicated by charcoal-stained streaks encountered in the sand below the nominal base of the site. An early radiocarbon date (P-1038) suggests that these streaks may be attributed to the Ocean Bay tradition, but the rare artifacts recovered are stylistically neutral or are of Old Kiavak type. The composition of the site deposits is shown in Figures 11 and 12.

Impoverished Zone

Old Kiavak artifact types are present in the impoverished zone, but numbers usually are limited to one or two specimens each. For instance, only two ulu blades/ground slate fragments were recovered, though for the whole site this combined class numbers about 200 specimens. The otherwise relatively common notched pebbles are absent. Some other artifact types possibly were unknown at the time this horizon was formed more than 3000 years ago, but negative evidence must be interpreted in the light of the small sample of little more than a score of artifacts. One can expect technology to change during a long span of time, but present data do not allow one to see the impoverished levels as a separate stage or phase leading to the Old Kiavak

phase. The lower levels are distinguished by the presence of features showing that occupation was well established then. Several factors probably account for the low artifact recovery.

1. Natural increment of sand, blown in from an adjacent shore, increased the mass of the deposit but in the process diluted its anthropogenic content. This condition actually is seen in the deposits.
2. Housekeeping habits, unlike those of later times, may have resulted in few artifacts being lost or in trash being disposed of away from the living area.
3. Organic preservation is very poor, though this condition also prevails in other parts of the site.

Nominal Subsite Zone

Thin occupation traces spaced between sand layers found below the nominal base of the site (below the impoverished zone, below 200 cm) might indicate even greater natural deposition of sand when people first camped at this locality. But when the deepest streaks were formed shoreline topography and conditions for sediment deposition at the site probably differed from those found there today. Judging from the early radiocarbon date (P-1038), the people who first occupied this strand should not have been Old Kiavakers but would have been Ocean Bay people. No features were encountered below the nominal base of the site, though one small stone slab with adhering char is attributed to the sub-site zone. Some artifacts and stones may have been trodden into the sands by later occupants. This process probably accounts for the recovery of one or two plummet-type grooved stones from the underlying deposits inasmuch as this artifact is not reported for the Ocean Bay tradition. Similarly, treading of loose beach sands could have forced the remaining rare artifacts into underlying depths. This explanation, however, fails to account for the unbroken charcoal stained streaks. I wish that we had conclusively established theie anthropogenic origin.

The substrate deposits constantly presented an enigma during excavation. An edited passage from the fieldnotes is quoted below. Because of their sterility, these layers were not completely excavated in all sections. As well, the influx of water at high tide started to undermine the walls and prevented excavation from being taken to deep levels at some locations.

> Below the nominal base of the site in Section A4 (which was below a thin layer of black-brown site dirt varying between 180 and 220 cm depth, irregular in relief) find bones [rotten, not recovered] and soil staining for an additional several cm depth. This sub-nominal base extends down to a compact sand. Find two flat stone slabs--must have been carried in by people. One is at 235-240 cm. It was removed and was found to have adhering char. Starting at a little over 240 cm and dipping down to *c* 255 cm is a large natural whale epiphyseal plate.

Expected Level Distribution of Old Kiavak Phase Artifacts

Artifacts are more numerous in the upper levels. A tendency for an artifact class to cluster in the top levels, nevertheless, does not necessarily mean that it is to be attributed mainly to the latest phase or Koniag

TABLE 4. COMPARISON OF THREE OLD KIAVAK ZONES

Trait	Main artifact zone	Impover-ished zone	Sub-site strata
Toggle harpoon head	x		
Toggle harpoon foreshaft		x in house pit?	
Non-toggling harpoon	x	x " "	
Ground slate points	x	x	
Flaked points	x?	x	
Bone gorge/prong	x		
Root/clam digger	x		
Notched pebbles	x		
Fish hook shank	x		
Type 7 grooved cobble	x	x	x B Tr.
Other grooved cobbles	x	x	
Bone wedges	x		
Bone awls	x	x chisel edge	
Adze bits	x	x*	
Bone adze haft	x Koniag?		
Grinding slab	x	x	
Maul head	x Koniag?		
Stemmed knife blades	x	x	
Ulu blades	x	x 1 only	
Abrasive stones	x	x	
Stone saw	x		
Hammerstones	x		
Ulu-shaped scrapers	x	x	
Slate fragment scrapers	x	x denticulate	
Unifacial trimmed shingles	x	? top of zone	
Boulder flakes	x	x	x B Tr.
Long flaked slate blade	x	?	
Flaked chert/greenstone except points	x	x B Tr.	x
Chert chips	x	x	
Notched greywacke piece			x
Drilled holes in slate	x		
Lamps	x		x**
Incised tablet		? very top	
Clay-lined depression	x	x	

Stone slab "box"	x	x	
Boulder/rock feature	x		
Hearth		x	
Circular cluster of large pebbles		x	
Isolated stone slabs	x	x	x
Whale bone		x	x

* Fashioned from a boulder flake. No greenstone adze was recovered here.

occupation. In order to judge what may be a normal or expected distribution for Old Kiavak phase artifacts, the distribution of certain artifacts considered to be exclusive to that phase has been collated in Table 5. These items are identified on the basis of typology, and although some would occur also in a Late Kachemak component it is believed that no such component is present. Bone artifacts are excluded because of differences in preservation between layers. The distribution of Old Kiavak phase artifacts favors Levels 2-3.

TABLE 5. LEVEL DISTRIBUTION OF SELECTED OLD KIAVAK PHASE ARTIFACTS

Artifact	Trench	Level (25 cm)								
		1	2	3	4	5	6	7	8	Total
Unifacial	A	3	4	5	1	1	1	0	8	15
shingles	B	1	2	1	1	4	0	0	–	9
Plummets &	A	1	0	1	0	1	0	0	0	3
edge-grooved cobbles	B	0	2	1	0	2	1	1	–	7
Notched	A	4	6	4	2	1	4	1	0	22
pebbles	B	7	13	11	13	0	0	0	–	44
Serrated or	A	1	1	4	4	0	1	1	2	14
barbed stem point/knife Kachemak style	B	0	3	3	0	0	0	0	–	6
TOTAL	A	9	11	14	7	3	6	2	2	54
Number	B	8	20	16	14	6	1	1	–	66
Percent	A	17	20	26	13	5.6	11	3.7	3.7	100%
	B	12	30	24	21	9	1.5	1.5	–	99%

Dating the Old Kiavak Component

Several radiocarbon assays pertain to the age of the Old Kiavak phase component (Table 6; Stuckenrath et al 1968). All samples dated are wood charcoal with the exception of charred fat scraped from pottery for one date. The probability that the charcoal is from driftwood raises the likelihood that the dates are too old by up to several decades to account for tree growth and the drift cycle.

The earliest sample, P-1038, dates a charcoal streak found below the nominal base of the site in Trench A and was expected to date the impoverished zone. However, the age of 4698±71 BP (uncalibrated) is well into the range of the Ocean Bay tradition, and fails to be useful for dating the Kachemak tradition. The collection from this zone is too scant to verify that an Ocean Bay occupation actually is present. If sand had accumulated on the site without major interruption, the charcoal streaks below the nominal base of the site likely would predate the impoverished zone by a few centuries only instead of as much as two millennia. The dated charcoal sample came from above highest tide level though stratigraphically it belongs to sub-nominal base strata which in most areas now are below higher high tide level.

Stratigraphically, the next oldest date is S-2997, which is 3375±255 BP but is in the wide range 1949 BC to 1419 BC, calibrated (Mills 1994). The sample came from about 25 cm above the nominal base of the site and probably postdates initial Old Kiavak phase occupation by less than a century (Fig. 13). The date generally fulfils its expected antiquity. It applies to the impoverished zone, but not necessarily to either the base or top of that zone which is poorly demarcated at the sample location. The sample consisted of large pieces of charcoal and the large error derives primarily from the laboratory equipment used for counting.

Third in the sequence temporally, but possibly not stratigraphically, is P-1039. Disseminated charcoal for the radiocarbon assay was collected from the base of the principal artifact bearing horizon, in Trench A, but it may be derived from the top of the impoverished zone. The distinction may be immaterial. The date, 3263±61 BP, signals the end of the time of rapid sand deposition. The calibrated range for this date (Table 6) thus overlaps that of the preceding date. Most of the Old Kiavak artifacts are of this age or younger.

S-2996 (1960±75 BP), and S-3488 (2750±130 BP) also come from near the nominal base of the site in Trench A. The two assays (S-2996, S-3488) are from splits from the same sample, the earlier picked for carbon, the later bulk (and thus potentially containing some marine fat char). The disagreement between the two assays is considerable and younger determination S-2996 is badly out of sequence with the chronology established by other dates. The 763 to 1165 year greater age (calibrated) of the second date, and stratigraphic and artifactual data constitute a reasonable basis for rejecting the younger date.

The sample for assays S-2966 and S-3488 came from a strucatural depression, evidently a housepit, dug into natural deposits well below the nominal base of Trench A (see profile in Fig. 10). It comes from an area of hearth deposits and disarranged stone slabs, probably a hearth, found 175 to 215 cm below the

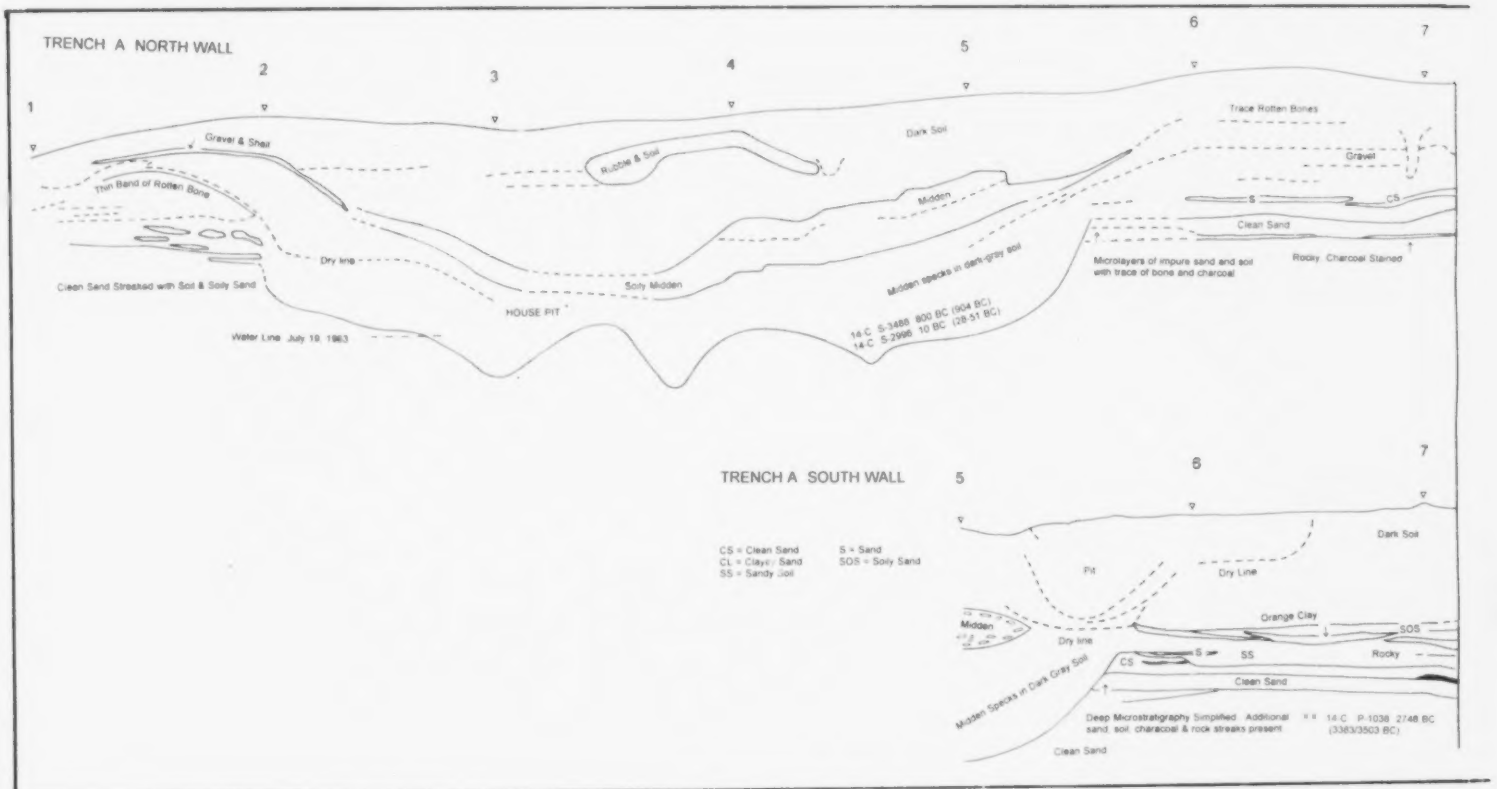


Figure 10. Stratigraphic profile of Trench A (west half). Units are two meters long.

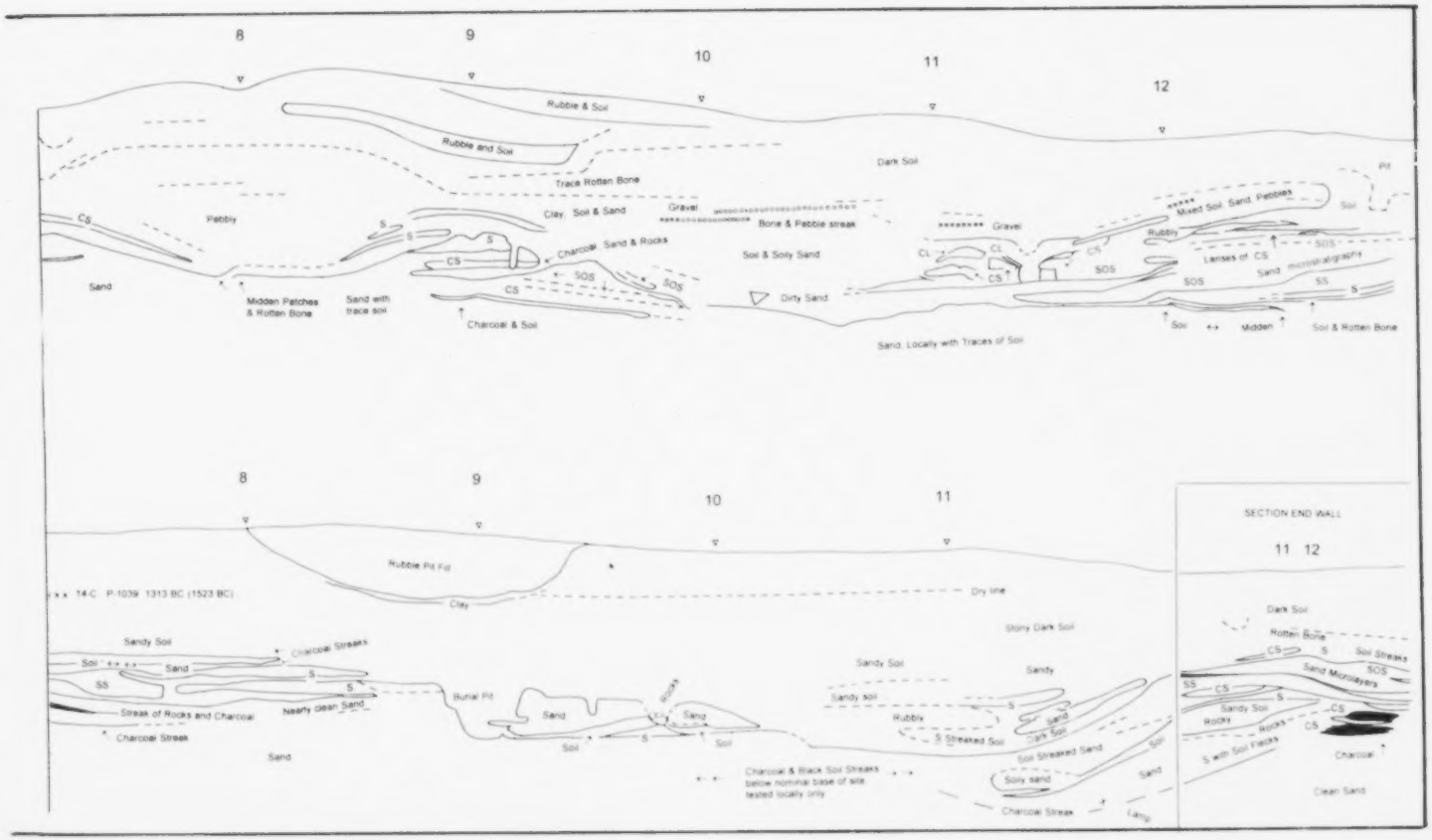


Figure 10--continued (east half).

Figure 11. Photograph of Trench A wall showing the composition of deposits and vegetation.

Figure 12. Photograph of Trench A end wall, showing change in the composition of deposits.

[from p. 29] surface and 60 cm below the calculated elevation of a 10.5 ft tide (see description of the site) (Fig.16). Overlying fill within the pit, which was largely sand, yielded sparsely and thus is attributed to the so-called impoverished zone. Taking this ancient house excavation into account, the date should be between S-2997 (1678 BC calibrated) and P-1039 (1523 BC calibrated). This condition is not fully met, even by the 2 sigma date ranges which, calibrated, still leave a 235 year gap. Given the vagaries of radiocarbon dating, I do not intend to belabor this point. Possibly the 3263 BP date is too old for the top of the impoverished zone.

S-2998, 2400±235 BP dates massive charcoal from a Trench B structure of middle to late provenience within the Old Kiavak phase. This and the preceding 3263 BP sample came from different trenches and it is difficult to assess their degree of stratigraphic separation although both come from about the same depth. Deposits overlying the 2400 BP date yielded Old Kiavak phase-type artifacts, extending to the top level. Thus, the site appears to have been occupied for some additional centuries by Early Kachemak people, prior to Late Kachemak times.

The stopdate forward on the Old Kiavak component, and Early Kachemak, is the earliest age for Late Kachemak sites found in the Kodiak region. For this two dates can be cited: 2028±55 BP (P-1042) at Three Saints and 2033±52 BP at Crag Point (P-1057). Additional dates of similar age are available from other Kodiak sites (cf Jordan and Knecht 1988, Mills 1994). Available dating thus draws Late Kachemak back to between 2000 BP and 2100 BP. The Old Kiavak phase occupation probably ceased by 2200 BP. The end of this occupation and the end of Early Kachemak are probably coeval. In this paper any middle range Kachemak occupation is subsumed within "Early Kachemak." A more detailed, tripartite periodization cannot be established on the basis of the present collection.

Dating of later components at Old Kiavak was discussed in previous sections. For comparison with the earliest Old Kiavak dates we cite the following uncalibrated dates from other Early Kachemak sites and from late Ocean Bay II:

- At the Afognak River estuary site AFG-088, an apparent Early Kachemak component with transitional Ocean Bay aspects, has been dated to 3530±80 BP and 3490±90 BP (Beta-77807, Beta 88719, Table 6).
- Early Kachemak radiocarbon dates from Crag Point (KOD-044) start at 3340±60 BP (R. Mills 1994 and unpublished data), thus showing that the older Old Kiavak dates are plausible.
- Uncalibrated dates for middle to late Ocean Bay II at Ocean Bay, Afognak and the Rice Ridge site (KOD-363) are 3929±65 BC (P-1036), 3890±110 BP (Gak-3803), 3850 BP (Beta 43135) and 3860 BP (Beta 43134).
- Additional dates in the Early Kachemak time range are available from Kizhuyak Bay site KOD-324 (Crozier 1987, Mills 1994), Uganik Island site KOD-224 (Nowak 1978) and Shuyak Island site AFG-046 (Deakin 1993 Appendix 2) but they have not been shown to be associated with definitive collections.

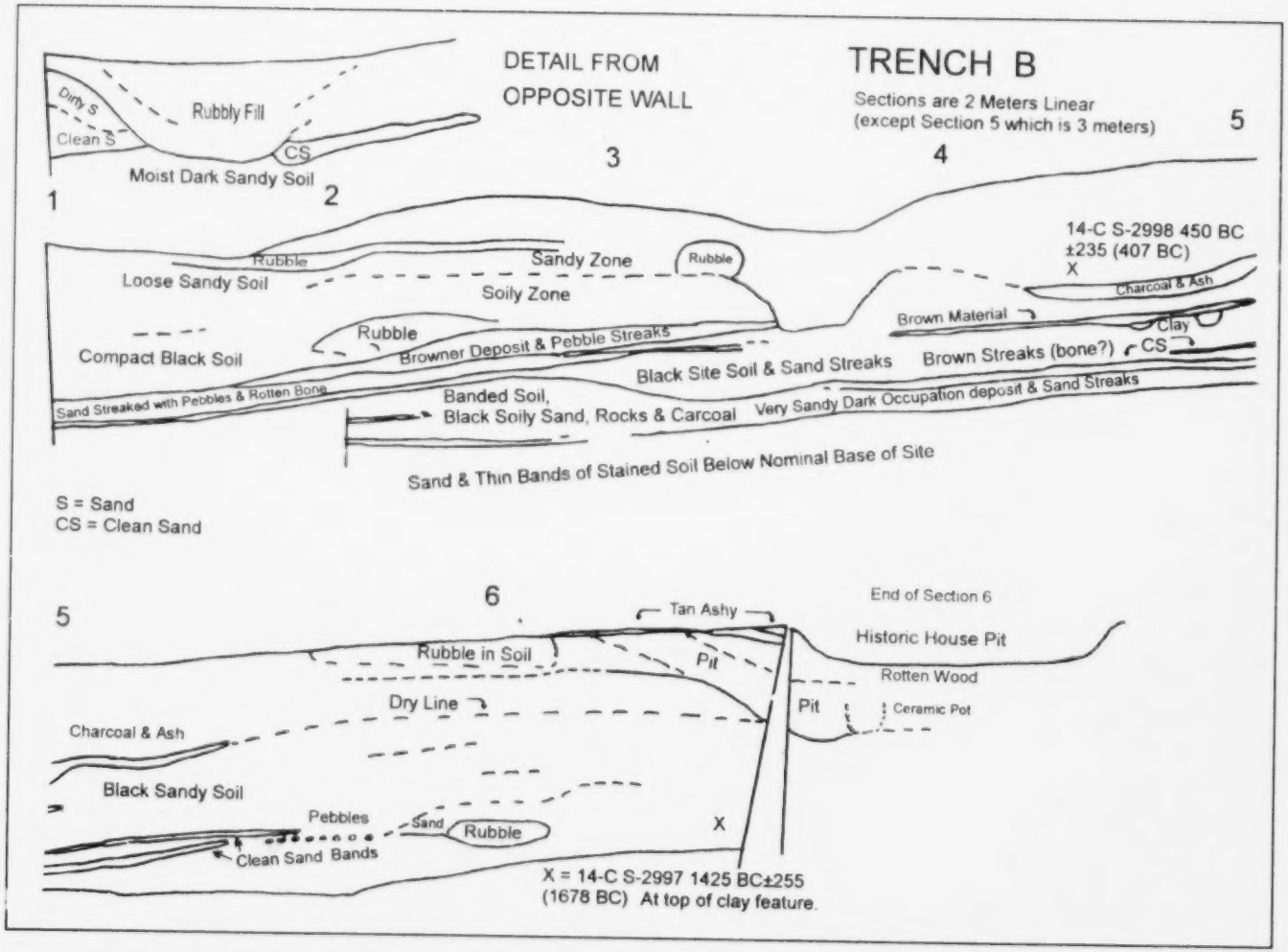


Figure 13. Profile of Trench B showing location of dated samples.

TABLE 6. RADIOCARBON DATES: OLD KIAVAK AND VICINITY AND AFOGNAK

Site	Number	Age[1]	Date Uncalib.	Date Calibr.[2]	Samples	Application
Kiavak 099	P-1044	270±44	AD 1670	AD 1642	Base site	Middle ceramic Koniag
Kiavak 099	P-1045	391±48	AD 1559	AD 1467	Base site	Middle ceramic Koniag
Rolling Bay	P-1047	393±40	AD 1557	AD 1466	Older part	End of early ceramic Koniag
Old Kiavak	P-1041	937±49	AD 1013	AD 1040	Pottery[3]	Early ceramic Koniag
Three Saints KOD-083	P-1043	1119±49	AD 831	AD 897, AD 940	Upper lev.	Late Kachemak
Three Saints	P-1042	2028±55	78 BC	40 BC	Near base	Beginning of Late Kachemak
Old Kiavak	S-2996	1960±75	10 BC	28-51 BC	Near base	Early Kachemak housepit
Old Kiavak	S-2998	2400±235	450 BC	407 BC	Structure	Near end of Early Kachemak
Old Kiavak	S-3488	2750±130	800 BC	904 BC	Near base	Same as S-2996, depression that penetrates to base site
Old Kiavak	P-1039	3263±61	1313 BC	1523 BC	Middle lev.	Early Kachemak at Old Kiavak
Old Kiavak	S-2997	3375±255	1425 BC	1678 BC	Near base	Early Kachemak at Old Kiavak
Old Kiavak	P-1038	4698±71	2748 BC	3383 BC, 3503 BC	Sub-base	Pre-Kachemak occupation
AFG-088	Beta-77807	3530±80	1580 BC	1880 BC	Base site	Earliest Early Kachemak
AFG-088	Beta-88719	3490±90	1540 BC	1765 BC	Base site	Earliest Early Kachemak
AFG-088	Beta-88720	2780±110	830 BC	910 BC	Unnatural base site	Intrusive feature? Later Early Kachemak

[1] Before AD 1950 (conventionally referred to as "BP," 5568 yr standard half-life, without calibration for tree-ring based true age. Originally, in 1966, Clark reported several of these dates as before AD 1965.

[2] Calibrated dates are calculated from age in Mills 1994 by subtracting CALIB program dates from 1950 AD, with the exception of the Beta dates which were calibrated by the Beta Analytic Radiocarbon Laboratory.

[3] Char, probably from sea mammal fat; with corrections and calibration adjusts to about 600 BP.

From these dates it is apparent that there is only a few centuries time unaccounted for between the end of the Ocean Bay tradition and the beginning of the Kachemak tradition. Statistically, there is no gap when the two sigma date ranges are taken into account. At Old Kiavak, though, there may be a gap of about five centuries (not taking into account the "error" ranges of the dates). Crozier's dates Beta-14500 and Beta-8186 (in Mills 1994) from Kizhuyak Bay site KOD-324 actually close the gap, but the collection there is insubstantial and it is not clear to which culture components the dates apply. The case is similar for Shuyak Island site AFG-046. There are no gaps in the string of calibrated radiocarbon dates.

Evidence for Late Kachemak Visits

Kachemak tradition occupation of the site did not necessarily take place only during the early part of that tradition. There are many artifact continuities within the Kachemak tradition and on the basis of artifact styles much of the recovered assemblage could as readily be either Late or Early Kachemak. Radiocarbon dating of the upper levels is too limited to confirm a Late Kachemak presence. One Trench B date is sufficiently late to suggest that the site was occupied to the beginning of Late Kachemak time, and the early ceramic Koniag component shows that there was occupation soon after the end of the Kachemak tradition. Later, sporadic reoccupation is possible, though in most instances that must have been minor considering its light footprint in the form of any discrete layer of refuse. Given the poor preservation of organic objects we have a limited number of attributes to evaluate for evidence of the Late Kachemak phase.

Stone lamps were relatively common in the upper levels. None shows the distinctive decorative elements commonly but not universally present on Late Kachemak lamps (cf Clark 1970, Heizer 1956). The lamps thus do not have a late complexion.

Late Kachemak ground slate points often are decorated with so-called ownership marks. One decorated point was found at Old Kiavak in Level 3. Inasmuch as Level 3 is approximately coeval with a feature that only shortly precedes Late Kachemak times (Table 6 date S-2998), this specimen may illustrate the precocious appearance of one Late characteristic.

Artifact Collections: Old Kiavak Phase and Items of Uncertain Phase Attribution

Some Old Kiavak phase artifact types are exclusive to that component, but most are ubiquitous. Generally, artifacts found below the third or, rarely, the fourth 25-cm level can be assigned to the Old Kiavak phase with confidence, while the upper levels are mixed. The top of a midden band effectively segregates some specimens, those in and below the midden belonging to the Old Kiavak phase.

Artifacts illustrated in the plates are identified there by catalog number. Catalog numbers carry the prefix 419, followed by a letter indicating the trench (A,B, D, "C" being at an adjacent site), except in the case of finds without excavated context the prefix is "X" ("AX" for those from the shore adjacent to Trench A), followed by the section number, then by the level number (from top to bottom in 25-cm levels), and finally by an item number within each level and section lot. Often the item number is omitted if the object is unique to its lot.

Toggle Harpoon Head (Pl. 3e)

A small 5.7-cm-long toggle harpoon head with blade slit is of generalized Kachemak tradition format. This item from the midden zone may be unfinished inasmuch as it lacks a line hole.

Foreshaft (Pl. 3a)

An unbarbed prong from the impoverished zone has a shouldered stem like that of the barbed harpoon heads. It is identified as the foreshaft for a large toggle harpoon head and is similar to a damaged specimen found at the Late Kachemak Three Saints site.

Nontoggling Harpoon Heads (Pl. 3d-g)

Three stylistically uniform harpoon heads come from Old Kiavak phase deposits. The line would have been attached around the square-shank stem, above the bilaterally shouldered base. Each head has a symmetrical pair of bilateral barbs. A second pair of barbs may have been broken off the end of the largest specimen which exceeded 11 cm length.

Ground Slate Points (Pl. 4)

Eighteen probable ground slate projectile points were recovered. Thirteen described here are assigned to the Old Kiavak phase on the basis of attributes and provenience.

Nine barbed points are fashioned in the *Three Saints mode*, named for their abundance at that Late Kachemak site (Pl. 4a-f, k). In this style the stem has straight parallel, carefully flattened sides, a flat or slightly concave base, and is wedge-shaped in cross-section. Barbs are symmetrical and are usually large and well undercut. The barb meets the stem at a sharp, carefully cut angle. Considering the whole collection, though, the Old Kiavak points fall short of the ideal workmanship envisioned in the definition of this Kachemak style (Pl. 4d for instance). They were found in nearly all levels. Only one point is complete and it is damaged. One large point or lance blade (Pl. 4m) has a geometric design on the blade, like two capital Sans serif letter Es in a row: E E. Two broken points were re-edged at the end, obliquely and transversely respectively, possibly for secondary use as light-duty wood-working tool bits (Pl. 4b-c).

Three *unbarbed stemmed* points from Trench A Level 1 and Level 4 have stems otherwise fashioned in the Three Saints mode (Pl. 4g). Some of the stemmed points are not distinguished in style but their depth of occurrence points to a Kachemak tradition provenience (Pl. 4h-i, o).

From the impoverished zone there is a fragment of a *very slender point* originally 6.5 mm wide and more than 75 mm long (Pl. 4n). The stem is incomplete, lacking the butt end, but it evidently was formed through grinding the edges flat. Cross-section is lozenge lenticular. The incomplete specimen in Plate 4j is noteworthy for its narrow proportions which are like some Ocean Bay II points (Clark 1979: Pl 1K, 11D).

Flaked Points (Pl. 5, Pl. 6)

A bifacially-flaked basalt point, now *c* 6 cm long, is broken at the base but appears to have had a stem with sloping shoulders (Pl. 5b, 6b). The exact context of this specimen, recovered from the spoil, was lost, but flaked points are rare in the Koniag phase so it is attributed to the older component.

Two bifacially-flaked greenstone points were found near the nominal base of the site. The smaller point or implement tip was associated with stone slab fireboxes in Section A9 (Pl. 5c, 6a). It has a pointed single shouldered stem (if ends are reversed it becomes a drill) and in this respect is suggestive of Ocean Bay I points (Clark 1966a: Fig. 2B). This specimen is concavo-convex in long section, reflecting bowing of the flake blank, and is slightly ground on the convex face. A larger 5.5-cm-long specimen (B5-6) is lenticular in plan though slightly rounded at one end (Pl. 5d, 6f).

Notched Pebbles (Pl. 2d)

Numerous pebbles are notched at the ends. Customarily they are identified as fish net weights, though sometimes use as bird bolas stones is suggested. In most cases the notches are smoothed. The mean length of these pebbles of just over 68 mm is appreciably greater than that of the Late Kachemak Three Saints (mean 58 mm) and Crag Point notched pebbles (means of various lots 54 to 62 mm, Clark 1970). This is in keeping with a trend observed elsewhere for early specimens to be larger than later ones (de Laguna 1934). However, there is very little difference in average weight which is 45 g at both Three Saints and Old Kiavak. For length, all sizes between 56 and 80 mm are well represented at Old Kiavak.

Level distribution is given in Table 4. Deeper specimens were localized and it is possible that notched pebbles were absent very early at this site. Length and weight were examined according to provenience and it was found that there was no change in size through time.

Notched and Grooved Stones (Pl. 2e, Pl. 7)

Notched and grooved cobbles and larger pebbles are classified in Table 7. Attention is drawn to the Type 6 edge-grooved specimens. These have not been reported elsewhere in the Kodiak area. Seventeen specimens amounting to 37 percent are broken. Several coarse grained graywacke specimens are badly weathered and are cracking apart. Fully 60 percent of Type 7-7a (plummets, Pl. 7f-g, j-m) are broken. At 4.5 to 11.5 cm in length, and 57 to 570 g weight, they are quite variable in size, with the exception of the Type 7 plummets. The latter are consistently about 10 cm long.

The level position of Type 7-7a and the two Type 6 specimens is given in Table 4. Comparative information (Clark 1970, Heizer 1956:42, de Laguna 1934:55) indicates that all Type 7 specimens should be assigned to the Old Kiavak phase, even although their distribution extends almost to the top of the deposits. The other varieties were used both in Old Kiavak times and later, and Type 2b characterizes Koniag phase assemblages (Clark 1974:60-61).

Fish Hook Shank (Pl. 3j)

This Level 7 specimen is damaged at both ends, but clearly is a worked bone implement (not a natural bone) most similar in form to hook shanks of the Pacific region.

Bone Gorge or Prong (not illus.)

A small bipointed, 3.2-cm-long, birdbone splinter is similar to objects from Late Kachemak sites.

TABLE 7. NOTCHED AND GROOVED COBBLES

Type	Description	No.	Percent
1	Short groove over one end	1	2%
2	Groove girdling stone lengthwise (over ends)	7	15
2a	Like Type 2 but groove is discontinuous	6	13
2b	Notch or short groove over each end	13	28
(Subtotal Types 2, 2a, 2b		26	56%)
3	Continuous groove girdling stone around middle (over sides or short diameter)	2	4
3a	Like Type 3 but groove is discontinuous (intergrade between Types 3 and 3b)	1	2
3b	Notches or short grooves on each side	2	4
(Subtotal Types 3, 3a, 3b		5	11%)
4	Notches or grooves around middle and over one end	?	
5	Cross grooved or notched at or across sides and ends	0	0
6	Grooved around edge (stone is thinner than it is wide)	2	4
7	Grooved plummet, knob at end	9	20
7a	Like Type 7 but extensively sculptured at and near end to produce a neck	1	2
	Unclassified fragments (one is Type 4?)	3	6
TOTAL		47	101%

Clam Digger or Root Digger Tip? (Pl. 3k)

An incomplete, bluntly pointed, slightly curved bone object from the midden band is similar to specimens from Late Kachemak sites.

Bone Wedge (Pl. 12i, k-l)

Two bone wedges are *c* 7.5 cm long. One weathered Level 5 specimen belongs to the Old Kiavak phase while the damaged Level 3 specimen also shows the fine workmanship characteristic of Kachemak tradition wedges. In addition, there is a slender wedge from Level 1 that may be assigned to the Kachemak component (Pl. 12k).

Bone Awls and Related Tools (Pl. 3h-i)

Two short birdbone awls retain one articular end. At the other end the end the shaft has been ground to a sharp tip. An additional birdbone specimen has a chisel-shaped edge (Pl. 3h). It came from the impoverished zone and the other two are of deep, Level 5, provenience. There also is a 4.5 cm long sharply pointed prepared section of birdbone from these levels.

Adze Haft (Pl. 3f)

An eroded adze haft with knobbed "handle", found 42 cm deep in Trench A, is similar to smaller Late Kachemak specimens.

Adze-like Tool (Pl. 2b)

A natural angular piece of hard graywacke 14 cm long is shaped like an adze bit. The underside is ground and worn smooth. The bit edge is retouched, probably intentionally, and there is a trace of polish or wear at one corner. Phase assignment of this Level 3 specimen is not possible.

Adze Bits (Pl. 5j,l, Pl. 8)

Two Trench D Koniag phase specimens (D2-1.14, D1-2.3) were noted earlier, and there is one other bit from Trench D. All the remaining adze bits are from Trench A and most of them can be assigned to the Old Kiavak phase (excepting the large probable Koniag specimen in Plate 10 f). Counting all specimens of both phases, major fragments, the cobble spall adze, and the small bit noted below, but excluding two tabular adze-shaped flaked objects (Pl. 5h, p) there are 14 adze bits.

A *small bit* made on a greenstone flake, found deep, measures 18 by 32 mm (Pl. 5l, 6g).

An elongate adze-shaped *bit trimmed from a graywacke boulder flake* has a ground edge (Pl. 16a). This specimen from the deep impoverished zone is virtually unique.

A 10.6-cm-long greenstone adze (Pl. 8d) with carefully prepared cutting edge but roughly flaked body is similar to poorly standardized *roughly prepared planing adze* bits of the Koniag phase. Nevertheless, it comes from the dark Old Kiavak phase deposits of Trench D. The same description and cultural attribution likely apply also to major greenstone fragment A4-3.7.

There remain five bits that conform reasonably well to what may be regarded as an Old Kiavak style. They are small, short, tabular and often bear little finishing except at the cutting edge. They range in length between 51 mm and 60 mm, and in width between 30 and 43 mm. Only one specimen is reasonably well finished by grinding on the faces and sides (Pl. 8). It resembles small well-made tabular Late Kachemak bits of the Three Saints phase. The others are chipped along the edges and show little facial preparation. Distribution extends from Level 3 into Level 7.

Grinding Slab (not illus.)

A slightly worn slate grinding slab measures 15 by 17-20 cm across and is 1.4 cm thick. Utilization has not been sufficiently intense to remove all details of the original surface. Use or wear striations run in various directions. There is no trace of pigment on the stone. This Level 8 specimen comes from the base of the impoverished zone.

Stone Saws (not illus.)

One complete specimen and three fragmentary thin sheets of hard schistose rock are classified as saws. These have blunt, smoothed edges and are partially ground on the faces. Two fragments are double edged. The complete saw is 7.8 cm long. Similar specimens were recovered from the Late Kachemak Three Saints site. At least two specimens belong to the Old Kiavak phase on the basis of level provenience, which ranges from Level 1 to Level 7. An elongate saw-cut slate blank with convergent sides was found on the beach.

Maul Head (Pl. 2h)

An ellipsoidal cobble from the top of Old Kiavak or the deepest Koniag deposits bears pecked depressions on two opposite flat sides. This 12-cm-long specimen is broken but it is not battered. Comparable specimens occur in other Kachemak components.

Hammerstones (not illus.)

A heterogeneous assortment of 34 hammerstones was collected or recorded and discarded. These are variously well rounded, short to elongate, regular to irregular cobbles that have been used for hammering or battering. The 25 complete collected specimens range in weight from *c* 57 g (2 oz) to 480 g. Two large cobble hammers from the top level, probably weighing at least 500 g each, were not collected. One 200 g specimen has a pecked or battered cupped depression on one side.

Trench A specimens show the following distinctive level distribution:

Level	1	2	3	4	5	6	7	8	Total
Number	4*	15	6	0	0	0	0	0	25
Percent	16	60	24	0	0	0	0	0	100%

* Includes two large specimens not collected

The absence of hammerstones from the lower levels is striking, but this trend does not prevail across the whole site inasmuch as 3 of the 6 Trench B specimens are from the lower levels. The larger hammerstones could have been hafted for mauls and hammers, the smaller ones used as pecking stones for fashioning stone lamps, grooving cobbles, and for chipping adze blanks and uncommon flaked implements. There would have been a need for these tools during all periods.

Stemmed Knife Blades and Similar Objects (Pl. 4l, Pl. 9-10)

After probable projectile points have been segregated, there remain the double-edged knife blades (Table 8). Compared with points, the tips of knives tend to be wide, flat and highly convergent; the blades tend to be large and wide. Maximum width is 5.8 cm. All complete specimens and several fragments are illustrated. Their level distribution is given in Table 8.

Style 2, the serrated-stem blades, forms part of the baseline Old Kiavak distribution in Table 4 where it is combined with barbed points. The serrated form is not known from the Koniag phase. Thus, the fact that several were recovered from the top three levels is evidence that these levels are not composed exclusively of Koniag phase deposits. One serrated stem blade was found at the nominal base of the site in the impoverished zone. On the basis of style (Styles 1 and 2) or depth provenience, 26 specimens are assigned to the Old Kiavak phase and 19 specimens are indeterminate. The indeterminate ones (all counted above in the second group) consist primarily of nondiagnostic fragments. Koniag phase specimens are poorly represented and any present fall among the four (one complete) Style 4 shouldered plain-stem blades.

Ulu blades (Pl. 9p, Pl. 11)

Nineteen complete blades for broad back-hafted knives or ulus were recovered from Trenches A and B together with 33 fragments, each representing an estimated one-third or more of a complete blade. One deep specimen is flaked, the others are ground from slate. Compared to Koniag phase ulus, the present blades tend to be short with a median length between 9.5 and 10 cm and a weak mode at 9 cm. The length of complete blades ranges from 6 to 14 cm, with the addition of one 19-cm-long specimen that probably is Koniag. Many fragmentary blades, if complete would fall in the upper part of this range. The two largest specimens, one of which is broken, come from Level 1 (Pl. 2f) and likely are Koniag. The radius of curvature ranges from 3.5 to 23 cm. The distribution by level, including broken specimens, is given in Table 10.

Two complete and three broken specimens are perforated by drilled holes to assist their lashing to a handle (Pl. 11k, m). The distribution of these pieces plus four other drilled fragments of slate is: Level 1 n=5, Level 2 n=3, Level 4 n=1. Earlier ulus do not appear to have drilled perforations. Nevertheless, drilled holes are present in two deep Old Kiavak phase slate artifacts which are not ulus. Probable Koniag specimens were described earlier. All of the drilled slate pieces (including specimens other than ulus) show a vary careful technique of drilling characteristic of but not exclusive to Late Kachemak sites (Clark 1974) which contrasts to the rougher work seen in most specimens from Koniag sites. Although all ulus with drilled perforations come from the top 50 cm of the site, half of the ulu collection was found below that depth. This distribution suggests an increase in perforated slate late in the Old Kiavak phase. Conversely, some of the drilled blades could belong to early ceramic Koniags if these people were still drilling slate in the mode of their antecedents.

In an earlier study of 31 largely late Koniag drilled slate blades, 27 probable Late Kachemak blades (with 29 holes) and 11 probable Early Kachemak blades the writer perceived two differing modes by which the holes were formed. It was inferred that the types of drills used differed accordingly (Clark 1974a:106-107). The holes were examined for striation patterns to see whether they were made with a bow drill (or a

rotary drill) or by a hand held gouge-like implement. Semenov (1964) gives criteria for recognizing these techniques. In practice, though, there are problems in applying Semenov's criteria. Work even done with a bow drill could have been sloppy and produce irregular tool striations. This situation resulted in a large number of inconclusive observations. Nevertheless, none of the eight early Kachemak holes examined were made by a hand drill or gouge. Similarly, none of the 26 Late Kachemak perforations clearly were produced with a gouge or hand-held bit. For the late Koniag sample 5 of 28 holes definitely are hand drilled or gouged, and 7 more possibly so. In terms of the inferred drill type these data suggest a trend by which early and late drilled slate assemblages can be distinguished, but with exceptions.

TABLE 8. DOUBLE-EDGED STEMMED SLATE BLADES, KNIFE FORMAT

Style, Description	Number	Plate
Complete specimens and diagnostic fragments		
1. Two drilled holes located near plain base, wide	1	Not illus.
2. Serrated stem	12	Pl. 4l, Pl. 9
3. Lugged stem (found elsewhere, Late Kachemak)	0	—
4. Plain stem, pronounced shoulders	4	Pl. 9k
5. Not classified, damaged, or modified	2	Pl. 9m
Fragments of limited or no diagnostic value		Not illus.
6. Terminal portions (tips)	12	
7. Midsections	3	
8. Plain bases (slightly rounded, probably unshouldered, sharp edges run to base)	8	
9. Fragmentary unfinished	3	
Total	45	

TABLE 9. LEVEL DISTRIBUTION OF DOUBLE-EDGED KNIFE BLADES

Level	1	2	3	4	5	6	7	8	Total
Style 1 and 2									
Tr A	1	0	2	3	0	0	1	1	8
Tr B	0	2	2	0	1*	0	0	—	5
All others									
Tr A	2	4	8	3	4	3	0	0	24
Tr B	2	2	1	1	1	0	0	—	7

TABLE 10. LEVEL DISTRIBUTION OF ULU BLADES

Level	1	2	3	4	5	6	7	8	9	Total
Ulu Blades										
Tr A	6	16[1]	6	7	3	2	0	1	0	41
Tr B	2	1	4	2	1[2]	0	0	–	–	10
Ulu blades Combined with Ground Slate Fragments										
Tr A	44	39	17	25	12	3	0	4	1	145
Percent	30	27	12	17	8	2	0	3	0.7	99.7%
Tr B	14	11	19	6	0	1	2	1	0	54
Percent	26	20	35	11	0	2	4	2	0	100%

[1] Two come from a section excavated through Level 2 only.

[2] Flaked specimen noted above.

Drilling, inferred from hole form, provides a clearer contrast between Kachemak and late Koniag techniques. All holes are to some degree biconical. In "counter drilling" the two cones are produced by first drilling part way through from one side, then turning the piece over and drilling from the other side. The two cones thus formed usually meet imperfectly in the center. Counter-drilling correlates with late Koniag times and technology.

The alternative technique proposed is back-drilling. Although it is clearly identified in only a minority of specimens, it possibly is present in most Kachemak specimens. Details of back-drilling are inferred from the study of finished holes. A hole was drilled completely through the object from one side. The piece then was turned over and the artisan drilled back through the same hole, enlarging and completing the perforation. That removed most of the initial taper and left a relatively straight barely biconical hole. In many back-drilled specimens a major cone and a minor cone can be observed, not completely removed in the drilling-back-through procedure. On the side of the minor cone the surface is damaged or flaked away around the perimeter of the hole. When the specimen was holed-through from one side, flakes of slate were forced off the opposite side. The scars were not completely removed when the hole was back-drilled. This technique has the advantage that there is no problem with badly offcenter meeting of the two halves of the hole.

Ground Slate Fragments

The distribution of these fragments, shown in Table 4 combined with ulu blades, is weighted towards Level 1. Evidently there was increased slate grinding or greater fragmentation of slate blades late in the history of the site, including the Koniag phase.

Abrasive Stones (Pl. 12)

The abrasive stones are of two types consisting of utilized pumice (Pl. 12b) and scoria lumps (N=4) (Pl. 12c) and flat somewhat tabular pieces of sandstone and siltstone (N=20) (Pl. 12f-h, j). In addition to the utilized pieces of black, white and red pumice and black scoria, we found several pieces of white pumice in various sizes that show no traces of utilization. Such naturally occurring pumice is not uncommon on the beaches of Kodiak, and in the context of a site deposit may indicate that the site was subject to the wash of storm waves at high tide. The other abraders or hones are pieces of stone slabs that have been worn smooth, or are thin cobbles worn flat from use, usually on one side only. Twelve are of sandstone and eight are of finer-grained material such as siltstone, shale and slate. None appears to have been especially shaped about the edges. Most are fragmentary, but complete specimens evidently exceeded 8 by 10 cm in size.

The Trench A level distribution, comprising all but three specimens, is given below. This undistinguished artifact characterizes both the Koniag and Old Kiavak phases at the site.

Level	1	2	3	4	5	6	7	8	Total
Number	7	5	3	3	1	0	2	0	21

Ulu-shaped Scrapers and Slate Fragment Scrapers (Pl. 13b-c, Pl. 15i-m)

Nine complete ulu-shaped scrapers and eight major fragments are flaked from slate. They range in length from 7 cm to 23 cm. One appears to be a reworked piece of ground slate. Two more show traces of grinding near the edge. All have blunt edges and some cases the edge is smooth, possibly from use. This implement persisted with little change from Old Kiavak times to historic contact.

Numerous fragmentary or irregular pieces of flaked slate appear to have been used as scrapers. Some may be fragments of ulu-shaped scrapers, flaked backs of fragmented ulu blades, or raw material fortuitously shaped and edged through trampling. Two have serrate or toothed edges.

Boulder Flakes (Pl. 16-17)

Of 87 large cortical flakes detached from cobbles, 45 show reasonable indications of utilization. The remainder probably are rejects, or could not be examined adequately because the edge has been lost due to weathering and damage. One indication of utilization is smoothing of the edge. Another is retouch for flattening or straightening the edge. Many specimens have been trimmed around part or all of the perimeter by a battering retouch. Retouch flake scars most frequently show on the ventral surface, in some cases on both surfaces. Retouch or shaping may change the outline shape from that of the original cobble spall. For example, specimen A7-3.2 was flaked extensively, forming broad thick ventral bevels along two opposed edges, evidently to reduce the width of the object. Heavy battering has reduced one specimen to thick edges all around with a stem-shaped back (Pl. 12d). In another case (D1-3.1) extensive shaping has produced a pointed end (other end broken). There is a considerable range in the sharpness and thickness of these spalls.

A few boulder flakes also show traces of smoothing on the fractured (ventral) face and at the edge. For example, specimen B5-4.11, though not shaped to alter the original outline, is worn or ground for a short

distance back from the edge on each face, and in addition there is discontinuous smoothing all over the ventral surface. Such edges characteristic spalls used to saw slate. A Level 7 specimen (Pl. 16j) is very elongate like an adze, evidently due to some degree of shaping. The back is not retouched but the opposite edge is. There is some smoothing of the ventral surface, as if the specimen had been water rolled, but the deep provenience shows that this is improbable. Another spall was trimmed to a linear tablet and given a ground bit (Pl. 16a).

Length ranges from 6 to 15 cm. The mode is 10 cm. The level distribution is as follows:

Level	1	2	3	4	5	6	7	8	9	Total
Tr A	13	12	14	1	2	0	2	0	1	45
Percent	29	27	31	2	4	0	4	0	2	99%
Tr B	5	5	6	9	4	0	3	0	--	32
Percent	16	16	19	28	12.5	0	9	0	--	100.5%

There are marked differences in the recovery of this tool between sections, ranging from nil to 16 specimens. Possibly, some excavators did not consistently collect it.

This artifact is ubiquitous, though its popularity varied greatly from locality to locality. Extensive alteration or reshaping of the blank characterizes specimens from Old Kiavak and is a distinguishing feature of the Early Kachemak tradition there. Of the 45 specimens proposed as utilized, 29 are shaped or well retouched or (in two or three cases) worn smooth at the edge and provisionally are attributed to the Early Kachemak occupation along with 4 additional (unshaped) specimens from deep contexts. Occasional retouched boulder flakes occur in the 1964 Crag point collection, but alteration of the outline of the blank spall through flaking or battering does not characterize either the Early Kachemak or the Late Kachemak components there. For the Koniag phase, out of a modest recovery of at least 50 specimens, only two examples were noted as reshaped (Clark 1974a:81).

Ground Slate Splinters (Pl. 3 l-o)

Four ground slate splinters are rectangular or irregular in cross-section. The only complete specimen is ground on two sides; natural flat surfaces form the other sides as in Plate 3o. The ends of this 10-cm piece are blunt and unmodified, but one of the incomplete specimens is pointed, another ground flat (Pl. 3l). Artifacts of this kind, often called slate awls when pointed, are known for both the Koniag and Late Kachemak phases. Provenience is Level 1 through Level 3.

Trimmed Beach Shingles (Pl. 14-15)

Numerous flaked slate tablets were produced from beach shingles. Pointed-ovoid, elongate pointed, and flat-based blades with rounded to gently pointed ends were carefully formed in a manner that left one naturally smooth side of the artifact free from chipping scars. This characteristically gives them a unifacial

aspect, though sometimes both sides show cortical surfaces. The edges are thick, blunt and usually very regular. A few specimens bear traces of grinding by which the edges were blunted and irregularities removed, but none ever was transformed into a wholly ground implement.

These pieces do not appear to be blanks inasmuch as examples showing further stages of preparation have not been recovered. Similar tablets are not reported elsewhere, though they are strikingly abundant at Old Kiavak. The level distribution is shown in Table 4.

Roughly Flaked Leafshaped Blades (Pl. 15j-n)

Five reasonably complete roughly flaked leafshaped slate blades, and one tip fragment, were collected. Only the last one shows any trace of grinding. These pieces tend to be thick and all but one are blunted along the edges. Bases range from pointed to slightly rounded. Length is 9.3 to 17+ cm. This class is proper to but not unique to the Old Kiavak phase as it is found more or less throughout the Kodiak sequence.

Flaked Chert and Greenstone Objects (Pl. 5-6)

Flaked projectile points were described above. Some of the items noted here are of undetermined phase provenience while the remainder belong to the Old Kiavak Phase.

A bifacially-flaked, stemmed bladelike flake was found on the beach (Pl. 5a, 6d).

The large greenstone flake-knife or scraper from Level 3, shown in its dorsal aspect (Pl. 5o, 6j), is finely retouched along the dorsal edge.

A subrectangular tabular greenstone artifact is retouched unifacially along two steep edges (Pl. 5h). Formally, this Level 2 item is a bevelled end scraper, a type of implement extremely rare in the Kodiak region.

A thick, unidentified, 25 mm-long, unifacially flaked, subtriangular, Level 6 specimen is roughly fashioned from colorless chalcedony (Pl. 5e, 6b).

Plate 5m (and 6i) is a good example of a prismatic blade, though no blade industry is documented at the Old Kiavak site. There is a generalized flake core (Pl. 5q, 6e).

Other flaked artifacts include the rounded end of a relatively thin, red-brown chert biface (Pl. 5f), a tabular object retouched along one edge (Pl. 5p), the end of a large pointed uniface (Pl. 5i, 6h), nondescript bifacially flaked objects, unfinished bifaces and fragments or roughly retouched flakes (Pl. 5g, k, n).

A sparse scatter of greenstone flakes occurred throughout the site. Many of these flakes could be derived from the preparation of adze bits. Excluding these flakes, a core chunk, and the points, the flaked chert-greenstone industry amounts to 14 implements. They comprise 3 implements and 6 flakes from the top three levels, and 8 implements and 39 flakes from the remaining levels. To the latter group we can add two flaked points. The modest flaked chert and greenstone industry thus is most strongly represented in the deeper levels and may be exclusive to the Old Kiavak phase.

A very low incidence of flaked cryptocrystalline stone characterizes all sites on the outer coast of Kodiak Island north to the vicinity of the town of Kodiak, except during Ocean Bay times. North of Kodiak

and on Afognak Island there was an appreciable amount of chert knapping during both Early and Late Kachemak times. To the southwest, as well, on Chirikof Island, lithics are primarily chipped. Specifically, the ratio of all chert (including debitage) to ground slate implements (but not including chipped slate scrap) is 0.19 to 1 at Old Kiavak. For comparison, it is 3.9 to 1 at Afognak site AFG-088, discussed later, and 5 to 1 among Late Kachemak sites at the Afognak River (author's data) which represents a notable increase in the incidence of chert from the Afognak Ocean Bay II component where it is 0.23 to 1 for implements and 0.43 to 1 when debitage and slate scrap are included.

Miscellaneous

Notched graywacke chunk (Pl. 13a). An irregular, elongate chunk of graywacke bears three notches intermittently girdling the middle, two of them very slight, and is slightly battered along the top edge. This item from the sub-site sands may have been a weight.

End-hafted drilled blade (not illus). Weathering of the edges obscures functional positive identification of a 14-cm-long Level 4 ellipsoidal ground slate blade. Its flattened lenticular cross section is indicative of a double-edged blade. There is a drilled hole near each end along the midline. Traces of a stem suggest that this item was hafted from the end.

Stone Lamps (Pl. 18)

Several stone lamps are assigned to the Old Kiavak phase (Table 11). Only one complete lamp comes from a deep Old Kiavak context (Pl. 5h), but there also is a fine large specimen with deep bowl from the sand streaks at the base of the site (not illus.). The latter may have been left by Ocean Bay people 5000 years ago. This specimen is similar to one from Halibut Cove at Kachemak Bay where Ocean Bay implements have been recovered (de Laguna 1934: Pl. 24 4).

Late Kachemak lamps have many distinctive stylistic features while it appears that Old Kiavak phase and other Early Kachemak lamps were undecorated and of generalized format, like those in the present collection, though Hrdlicka (1944) stated that the earliest lamps were decorated.

With the exception of the definitive Koniag specimen, and one fragment from the beach shaped on the exterior margins, these lamps consist simply of well rounded cobbles and small boulders with shallow artificial depressions. The large lamp from the base of the site has a deeper basin. Nearly all are made of local sandstone. A network of cracks runs through many sandstone lamps, and natural cracking (found also in grooved cobbles) may be responsible for their fragmented state.

The small 7.2-mm-long specimen (A11-1.4) appears to have been a functional lamp inasmuch as it has a deep capacious basin. Such lamps often are called hunter's lamps, based on the reported use of small lamps by hunters in the Aleutian Islands.

TABLE 11. STONE LAMPS

Catalog number	Length, weight	Material	Probable component	Illus-tration
B5-1	17.7 cm	Sandstone	Late Historic[1]	Pl. 18a
B5-1.2	19.6 cm	Sandstone	Late Historic	
B6-1	17.6 cm	Sandstone	Late Historic	Pl. 18d
A4-1.12	Fragment	Igneous rock	Late Historic	
A5-1	Large frag.	Igneous rock	Ceramic Koniag	
B4-1.15	Frag., natural	Sandstone	Indeterminate	
A11-1.4	7.2 cm, 200g	Sandstone	Indeterminate	Pl. 18b
A6-1.2	11.1, 520g	Sandstone	Indeterminate	Pl. 18e
A11-2.1	Fragment	Sandstone	Old Kiavak?	
B5@44cm	Fragment	Sandstone	Indeterminate	
B4-2b.1	Fragment	Sandstone	Indeterminate	
B4-5.10	Fragment, not lamp?	Sandstone	Old Kiavak	
B5-5.1	11.6, 770g	Sandstone	Old Kiavak	Pl. 18c
D1-3.17	18+ frag.	Sandstone	Old Kiavak	
419X (beach)	Large frag.	Igneous rock	Indeterminate	
A11-8.1	23.5	Sandstone	Ocean Bay or base Old Kiavak	
B6-6.1	miniature	Graywacke	Old Kiavak	

[1] The Late historic specimens undoubtedly were recycled from an earlier component..

Incised Slate (Fig. 9)

A fragmentary pebble from deep within the site bears a set of incised zig-zag lines.

Labret (not illus.)

A severely eroded marble labret was recovered from the black layer of Trench D.

Spheroids (not illus.)

Five natural stone spheroids were collected. They range from 3 to 6 cm in diameter.

Faunal Remains

A modest collection of 36 to 41 major identified elements (excludes ribs, vertebrae and bones of the feet) was recovered (Table 12). According to the assessment I made in 1965 (Clark 1974:28) most of this

collection comes from an Old Kiavak phase midden band. Although a few specimens are of indeterminate provenience, none can be assigned positively to the Koniag component. Preserved whale bones almost are absent from the main Old Kiavak phase deposits, but a piece of whale bone severed by a circular cut was recorded for the base of the site at 160 cm depth. An unmodified epiphysial disc was recovered from the charcoal stained sands below the nominal base of the site.

Small as this collection is, it represents most of the mammalian species found at other sites on Kodiak. The high incidence of harbor seal is in accord with other collections, porpoise is less common than expected. Elsewhere in Kodiak sites the frequency of fox remains varies, though their abundance at Old Kiavak is extreme. The single bear bone is a fragment of a cranium sawn out in the same pattern as two specimens from Crag Point in which the roof of the vault was detached.

TABLE 12. FAUNAL REMAINS FROM OLD KIAVAK

Species	Number
Harbor seal *Phoca vitulina*	17 (45%)
Fur seal *Callorhinus ursinus*	0
Sea lion *Eumetopias jubata*	1-2
Sea otter *Enhydra lutris*	2-3
Red fox *Vulpes vulpes*[1]	11-14 (30%)
Domestic dog *Canis familiaris*	1
Brown (?) bear *Ursus arctos*	1
Porpoise	1
Whale[1]	1+
Total	36-41

[1] Excludes Late Historic component fox remains, a small whale vertebra exposed on the surface of the site bearing sharp (axe?) cut marks, and a roughly cut whale vertebra from Trench D Koniag deposits.

Features

Structural features were found at all levels of the site. They range from late historic hut remains on the main mound and a Koniag house depression visible on the surface of Area D, to a clay feature found at the very base of the site. Many feature floors, small pits, probable house pits and dips show in the strata and are portrayed in the trench profiles. Except for the surface remains, and a boulder cluster in Section A7, nearly all these features are attributed to the Old Kiavak phase.

The layout of features in Trench A is shown in Figure 14. Because of its physical separation within a large housepit, the deep hearth in Section A4 probably is not related to the other features, nor are the shallow boulders and cist in Section A7. However, the features of Sections A8-A10, including floor microstratigraphy in A5-A7, are concordant and may be from contemporary dwellings. In Trench A most features are deep and within the so-called impoverished zone. Exceptions are the boulder group and cist in Section A7, and minor occurrences of clay and boulders from badly disturbed features.

Trenching did not provide the excavation layout requisite for recovering meaningful structural information in the present case. Many features are truncated by the excavation walls, and those which are not truncated are isolated from associated dwelling structures and features. A stratigraphic depression in Trench A appears to be a single house pit. It has a 7-meter transect and presents a house of impressive size for an early occupation. An area excavation would be required to fully reveal such a structure.

Human Remains, Burials

Human remains were found as scattered bone fragments and as an interment, but little was recovered because of poor preservation. Such bones were found in the midden refuse band where some of them were not recognized as being human by the excavators when they were recovered together with other animal bones. Similar occurrences of scattered and broken human bones within kitchen refuse deposits characterizes the Late Kachemak tradition (Hrdlicka 1944, Clark 1970). The human bones have not been analyzed though fragments of a mandible, cranium, calcaneus and innominate were noted.

A pit in the strata at the base of the site beneath corner stake of A8-9 (see profile) can be identified as for a flexed inhumation. Limb bones turned to mush were recognized but were not recoverable. A boulder feature described below may also be a mortuary feature.

Boulder Group Cairn (Fig. 15)

Five boulders form a half rectangle. Partially within this enclosure are five more boulders at a slightly lower elevation. Some of the stones had a fire-altered appearance. A modest amount of fire altered rubble occurred with the stones and extended beyond in one direction, but no ash or charcoal was associated. A small area of red ochre mixed with a glittery mineral (probably specular hematite), found beneath the boulders, contained the enamel caps of four human teeth. The association of red ochre with teeth indicates purposeful disposition accompanied by a degree of ritual concern. The nine large stones are suggestive of cairn burial or the placement of stones over shallow graves. This was a common late prehistoric practice on Kodiak and boulder-covered interments were found in the adjacent younger Kiavak site (Clark 1974). Such treatment appears to be excessive for a few teeth, and one may suspect that other elements once were present but had decayed or had been removed by rodents. Nevertheless, no trace of bone or of a cremation was observed, nor were possible grave goods present. This possibly intrusive Koniag feature occurred at a

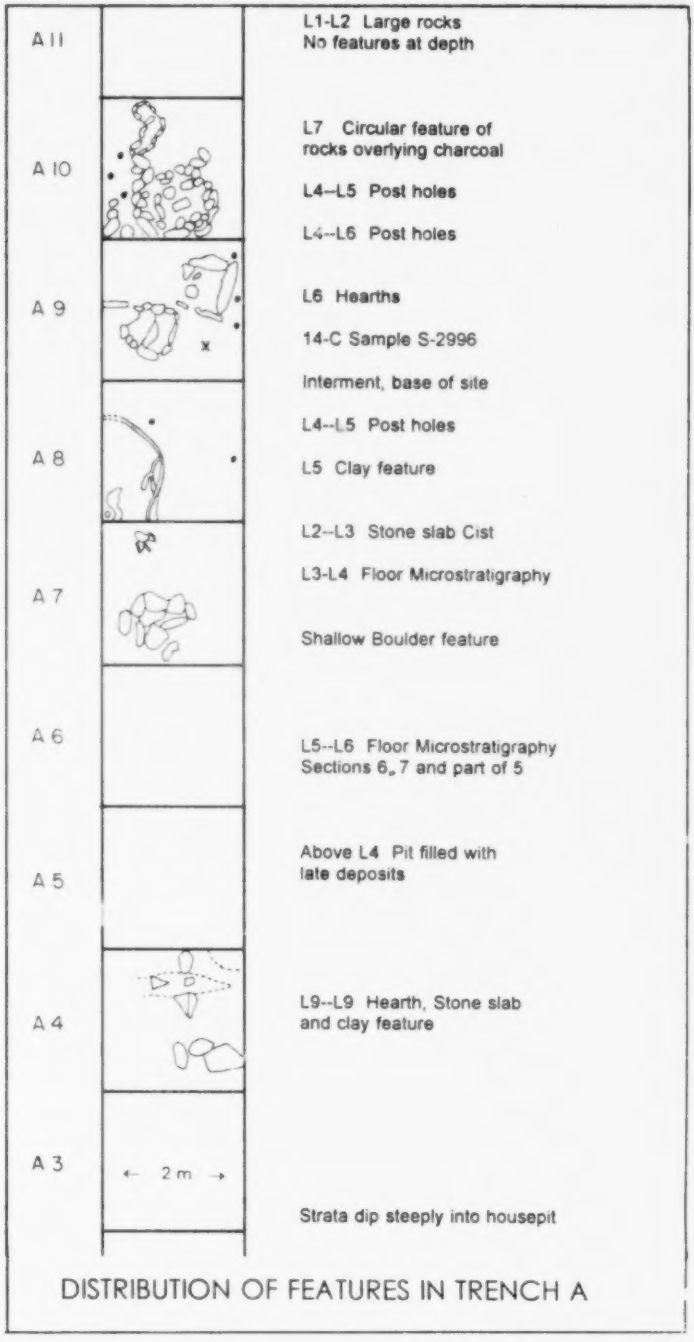


Figure 14. Distribution of Feataures in Trench A.

relatively shallow depth (25-75 cm), and the associated soil was browner than the soil common to deposits of the Old Kiavak phase.

Cist or Post Emplacement (Fig. 15 top)

A small stone slab structure in Levels 2-3 of Section A7 is proximal to a larger cobble feature though I consider the two to be unrelated. Four small elongate slabs, three of which were found in an upright position, form the walls. Some smaller slabs were wedged into the ground outside the three principal slabs. The feature had a slab floor. The inside width is not known accurately because of displacement of the slabs, but it appears to have been in the 20-35 cm range. A smaller slab box was found at the base of the site in Section B6. These features might not be cists but post settings, the slabs having been wedged around the base of a post to hold it steady during construction.

Post Holes

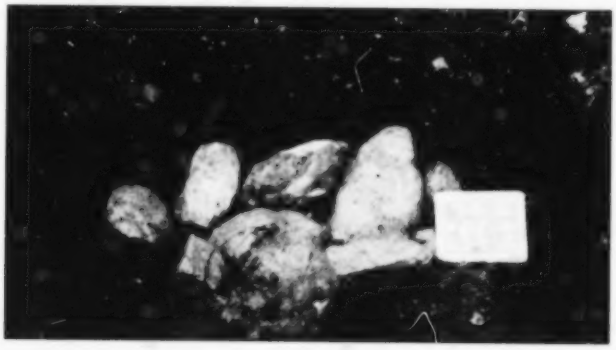
Post holes were found in three adjoining sections of Trench A (Fig. 14). They generally begin at 80-90 cm depth below the surface and continue for *c* 25-50 cm, which would place the base of the posts near the floor level of the features recorded in Sections A8-10. The holes range from 8 cm to more than 20 cm in diameter.

Circular Aggregation of Cobbles and Charcoal (Hearth?) (Fig. 16)

Numerous cobbles overlying charcoal were found near the base of the site in Section A10. Most of the cobbles lie within a circular cluster somewhat more than one meter in diameter. It was not recorded whether the cobbles had been altered by fire. The cobbles were not counted but 50 stones can be seen in the photograph of the main cluster (Fig. 16). Features of this nature often are identified as hearths or roasting ovens. Hearth boxes were located nearby at a slightly higher elevation in Section A9.

Hearths (Fig. 17, 18)

A disturbed hearth was found near the base of the site in Levels 8 and 9 inside a large sharply defined depression that may be a housepit (Fig. 17, see Trench A profile). The stones of the feature, which are illustrated, lay atop a thin sand layer. Some of the stones are displaced around a local depression that contained a thin layer of ash and charcoal. The actual relief between this depression and the surrounding rocks is *c* 20 cm, but the sand surface beyond slopes inward and the difference in elevation among all the elements figured is *c* 40 cm. A thin layer of charcoal extended outward from the depression and underlying adjacent rocks. The local depression extended to the left, like a trough, but outside the area figured it contained no ash or charcoal. Such dips or irregularities characterize the base of the large housepit. Two associated clay layers, one gray and one orange, ran into unexcavated sections. Below the sand layer upon



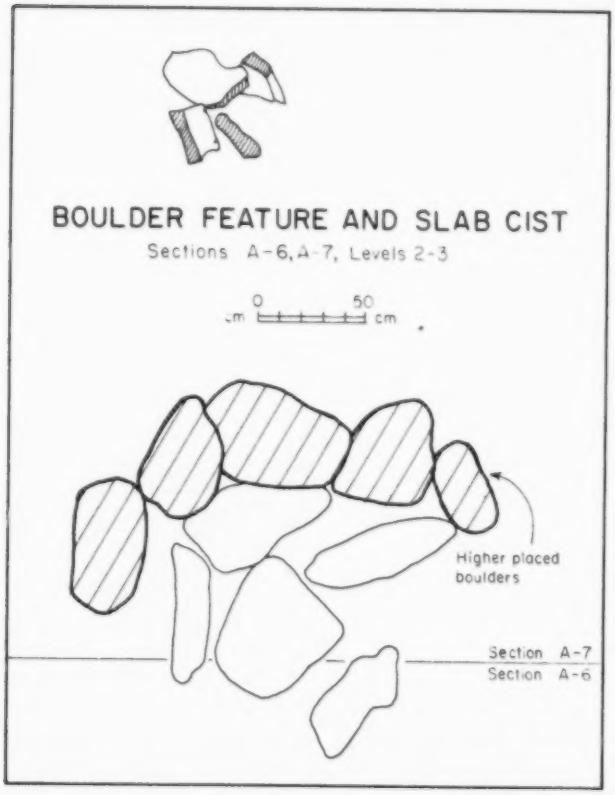


Figure 15. Photograph and drawing of boulder feature and slab cist, Section A7.

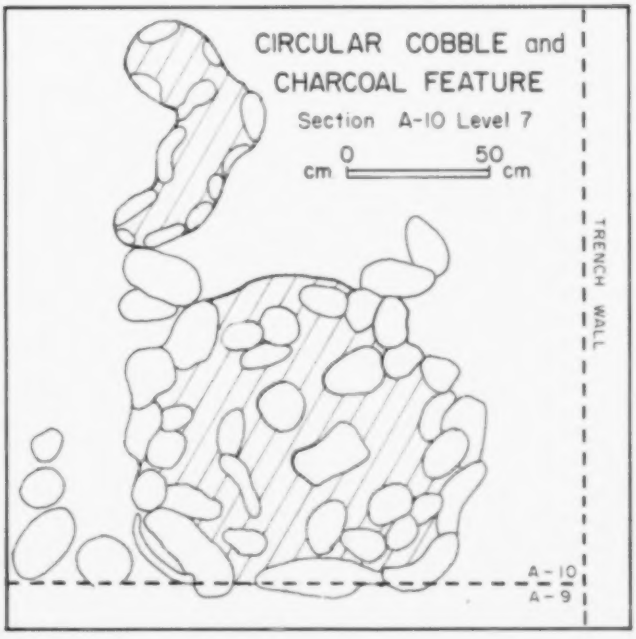


Figure 16. Circular cobble and charcoal feature, Section A10. The drawing only partially shows the abundant cobbles seen in the photograph.

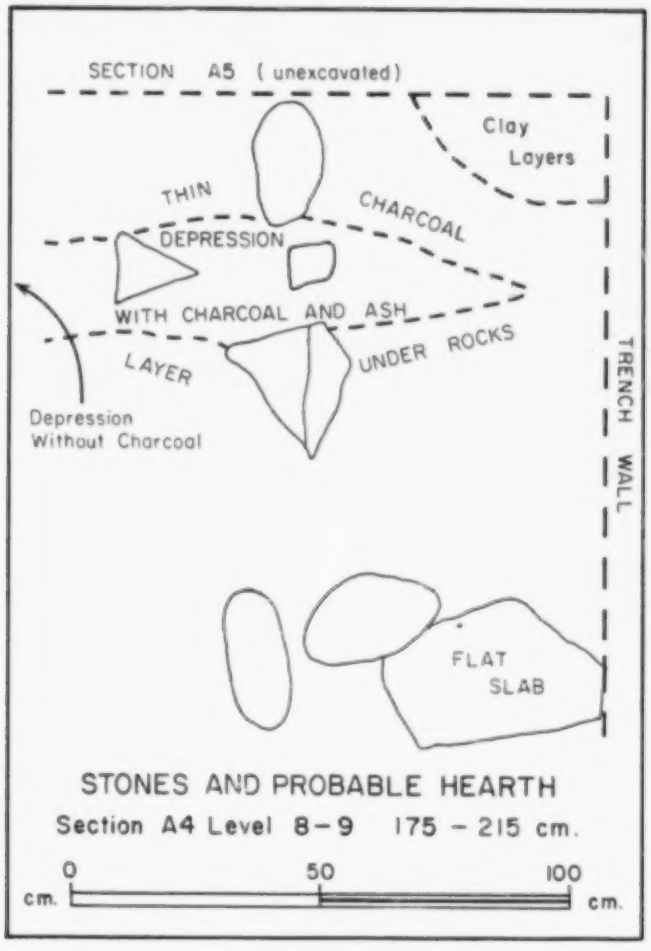


Figure 17. Stones and probable hearth, Section A4.

which the rocks lay there was one thin dark dirt layer and then the sandy nominal base of the site followed by a "subsite" suite of occupation traces.

Two well defined hearths were found at a higher elevation, though also near the nominal base of the site. A few comments should suffice to supplement Figure 18. One slab structure is a rectangular firebox. It measures 31 by 37 cm inside. Only traces of charcoal occurred within the box but masses of charcoal were found 50 cm away at a level concordant with and very slightly lower than the base of this feature. Inside there were 10 elongate, tabular natural slate beach shingles 6 to 9 cm long. The second feature that almost touches the rectangular box is a roughly circular, partially clay-lined construction 54 cm in outside diameter. Some charcoal was present inside. A large horizontal slab with adhering char partially covered the cavity. It may have been a frying surface. The rectangular box could have been used for other modes of cooking. The large roasting oven (tentative identification) described earlier is located hardly one meter distant. The host owning this complex may have been accustomed to ask guests how they liked their whale prepared: fried, barbecued, boiled, broiled or baked. Only traces of bone were seen in the area, and the occupants were careful not to leave implements lying about. Only a small flaked projectile point was found associated with these features. The floor layer was sand. Below that there was a layer of fire-altered rock and charcoal 3 to 8 cm thick, then the nominal base of the site followed by sparse traces of occupation.

Clay Features (Fig. 19–22)

Clay features were found from the base of the site upwards. Clay lined pits, depressions and "aprons" frequently were located adjacent to hearths in the Late Kachemak Three Saints site. This type of feature attracted attention as so-called unfired clay pots (Heizer 1956:30), but other domestic or kitchen features also were formed from clay. As might be expected from their occurrence within a continuously occupied site, these features often are truncated at the top or are severely disturbed.

A complex of clay and stone features uncovered in Trench B bears detailed attention (Fig. 19). We will describe this feature group from the base upward.

1. After the site had been occupied sufficiently long for fish bones (rotted to traces) and charcoal to accumulate in the basal sands, a series of cobbles and slabs was set down in the left upper corner of Section B4 at 108 to 127 cm depth. These rocks do not define a functionally identified feature.

2. A patch of orange clay was laid down in the left lower quadrant of the section at *c* 100 cm depth. The extent of this layer is not known inasmuch as it extends beyond the trench wall.

3. At the same level, and possibly at the same time, a small pit was formed at the edge of the orange clay apron and was lined with gray clay. This subrectangular pit was 30 cm wide inside, but being very thick-walled and irregular, it was 60 cm wide across the exterior and 15 cm deep. An adjacent apron of gray clay possibly is a remnant of another feature that subsequently was replaced.

4. An additional yellow-orange clay vessel was constructed next to the one described above. It appears that a hole was punched into the gray clay apron (episode 3 above) and then the orange clay was built up to the substantial height of 32 cm interior depth. Like many clay basins, it now is irregular and blobby. The maximum width inside was 27 cm, near the base rather than at the top. One area of the lip had adhering charcoal from grass that may have lined the basin. This vessel may have been largely free-standing above the floor.

5. Slightly later the area was extensively renovated. A band of light-colored clay was laid down across the width of the trench (disappearing into the walls) (Fig. 19). More clay-lined basins were made. Traces of one basin extends into an excavation wall. The principal "paved" area slopes and may have been lined with wood. Traces of burned wood and vast quantities of charcoal lie on this surface. However, the overlying layer, which should be derived from the structure roof, shows no evidence of a conflagration, i.e., oxidation. Depth from the surface at this stage starts at 61 cm and extends considerably deeper to the base of the sloped apron. The charcoal has been dated at 450 BC.

Additional clay features and a stone feature are illustrated in Figures 20 through 23.

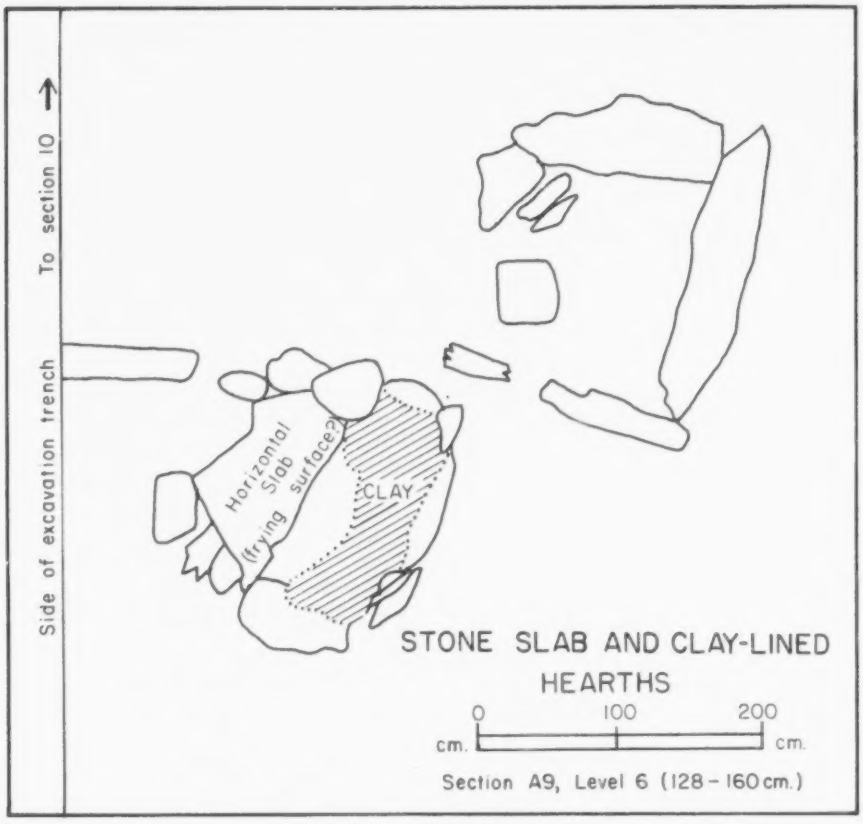


Figure 18. Stone slab and clay-lined hearths, Section A9.

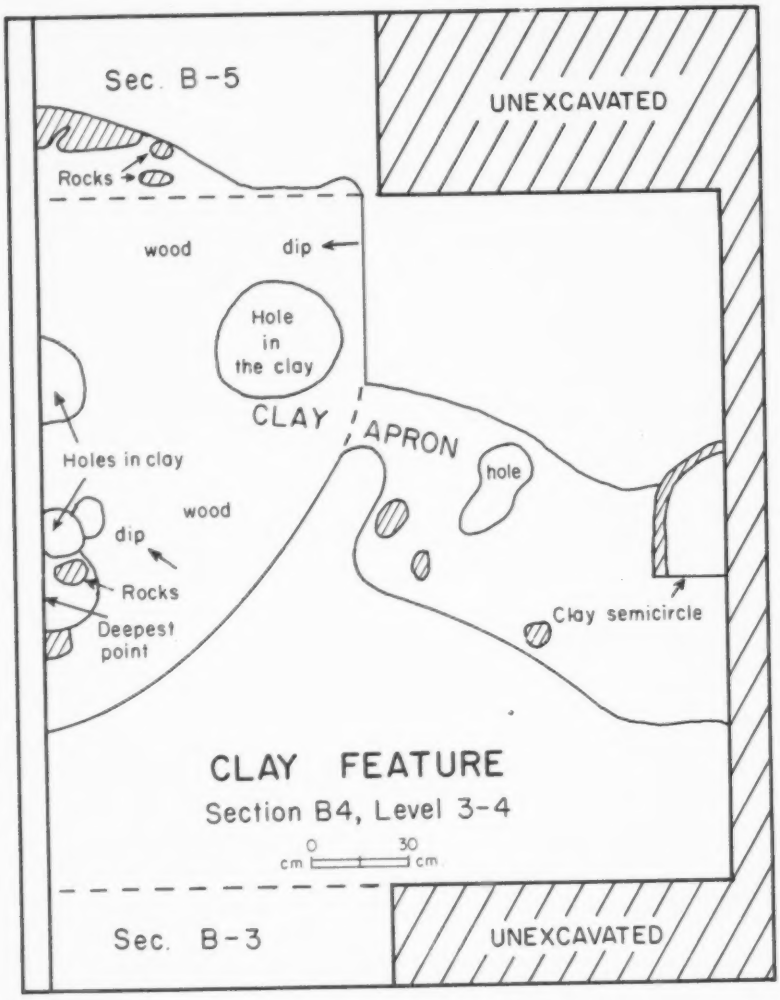


Figure 19. Clay apron, Section B4 Level 3-4.

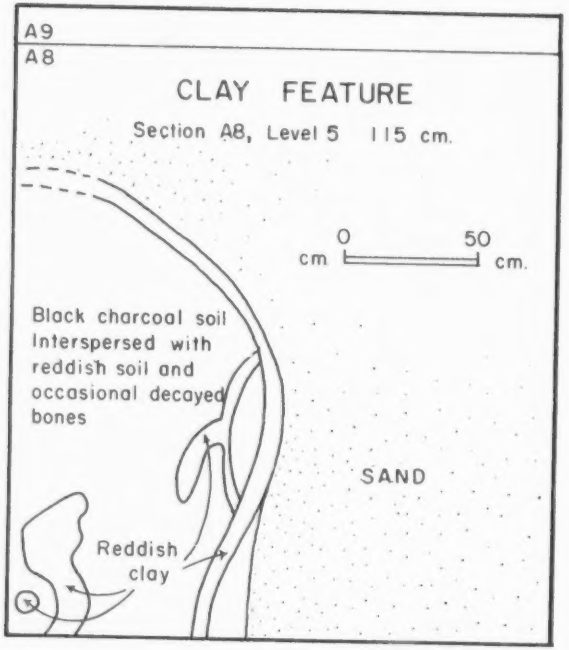


Figure 20. Drawing of Clay Feature, Section A8.

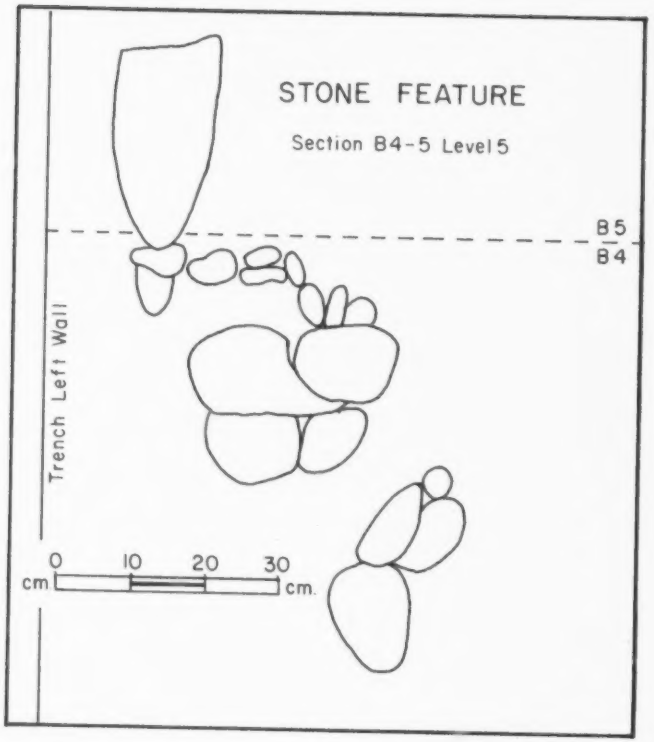


Figure 21. Stone Feature, Section B4-5.

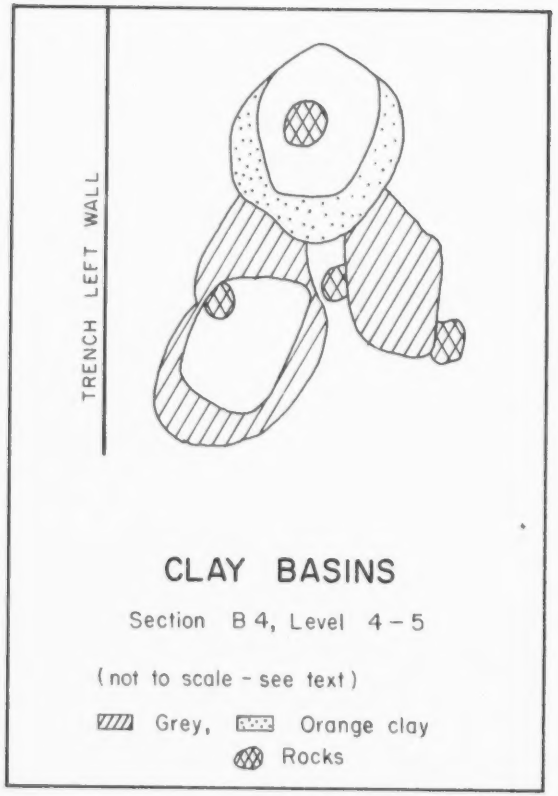


Figure 22. Clay basins in section B4-B5.

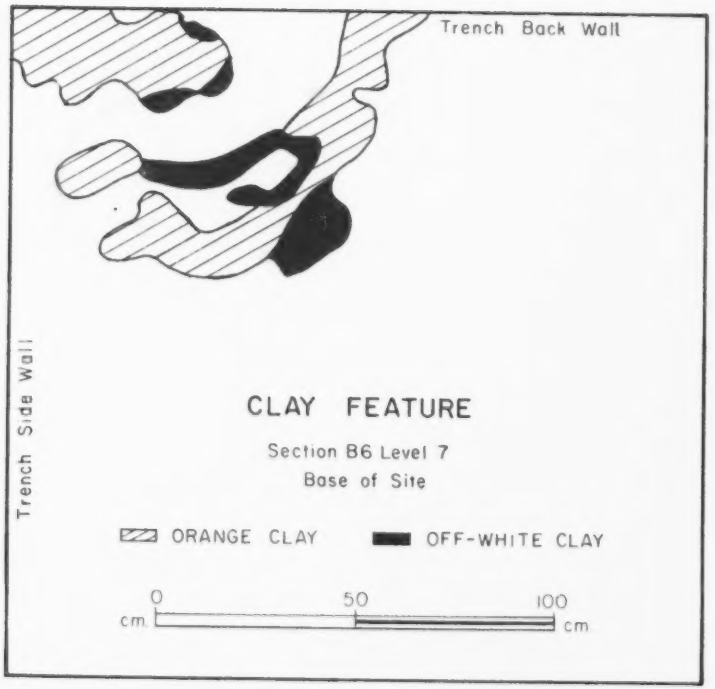


Figure 23. Clay feature in Trench B, Section B6.

DISCUSSION, SUMMATION AND CONCLUSIONS

Definition of the Old Kiavak Phase

What distinguishes the Old Kiavak phase from Late Kachemak components found at Three Saints, Crag Point, Karluk and elsewhere other than their difference in age? Inasmuch as Late Kachemak highlights often are in its bone artifacts, and since the Old Kiavak collection suffers from a paucity of organic artifacts, this question cannot yet be adequately answered. The following differences entail common traits expressed in nonperishable material.

- Double-edged knife or lance blades are common at Three Saints and Old Kiavak. However, a lugged or side-indented form of stem preparation common to the former is lacking in Old Kiavak.
- Another difference is the common occurrence of decorated barbed ground slate points in the Three Saints phase compared to a low incidence or absence of incised marks and decorations on Old Kiavak phase points.
- Old Kiavak stone lamps are all plain whereas secondary depressions and grooves in and around the bowl are relatively common in Late Kachemak lamps. Spectacular examples of Late Kachemak lamp art sometimes are recovered. Nevertheless, throughout prehistory plain lamps are common.
- One of the most telling Early Kachemak indicators is the cobble grooved about one end or sculptured to a neck, here called Type 7 and 7a plummet-shaped grooved stones.
- Unifacially-trimmed leaf-shaped beach shingles are largely unique to the Old Kiavak component.
- Expectations, based on Kachemak Bay finds, are for Early Kachemak notched pebble weights to be larger than Late Kachemak ones. The Old Kiavak collection barely fits this trend and notched pebbles found there are not significantly heavier than Late Kachemak examples. Nevertheless much larger notched pebbles or shingles have been found at Early Kachemak sites elsewhere on Kodiak. There is a large and a small variety of notched pebble or shingle sinker, the large characterizing early sites, the small being especially abundant in many Late Kachemak sites. At the Late Kachemak Three Saints site both are present, there being 100 of the smaller notched pebbles and 12 of the larger binotched shingles. The latter average 10.1 cm long. Individual specimens vary, but among several sites there is a remarkable consistency in the average length of this artifact (Three Saints 10.1 cm, Crag Point 9.2 cm, Woody Island 10.2 cm, Afognak AFG-088 10.0 cm).

Many additional tool types help fill out the description of the Old Kiavak phase but are not unique to it. Few items of bone, antler, wood, fabric and hide were recovered, and thus in a classic sense Old Kiavak is a complex rather than a phase assemblage. With further exploration site-specific ecological differences and regional variations should be recognized. One is reasonably safe, though, in asserting that Old Kiavak has

validity as a discrete unit within the Kachemak tradition framework. To define units that are both sequential and distinctively different within what Workman (1993) terms an "elaborating tradition" is a matter for further exploration. It is its early date and low rank within the "elaborating tradition" that in general distinguishes Early from Late Kachemak (See also de Laguna's characterization of the sequence quoted on page 80.). For example, beads are rare in Early Kachemak whereas Late Kachemak has bone, ivory, jet (coal), shell, amber and red stone beads. The question of defining other regional phases has been only partially tackled. It is apparent, though, that for Early Kachemak there are a number of regional, functional (ecological) and temporal phases (cf. Workman 1992). Old Kiavak is distinct from at least some other local phases of Early Kachemak by a low incidence of chert and other flaked lithics, in contrast to the situation on northern Kodiak, Afognak, and Kachemak Bay (writer's unpublished observations, Workman 1992). We also note below the Afognak phase, which is transitional Early Kachemak and differs from Old Kiavak.

Primary Archaeological Sources for the Early Kachemak Phase

Local phases of Early Kachemak have been defined at Kachemak Bay (de Laguna 1934, K. Workman 1977; W. Workman 1977: Workman, Lobdell and Workman 1980), but due to regional variation Early Kachemak is reflected differently on Kodiak. Aside from there being regional variation, a difference in ages alone supports the reasoning that between Late Kachemak components, as at Three Saints and Crag Point (2150 BP to less than 850 BP), and Early Kachemak components, as at Old Kiavak (3400 BP-2200 BP), it should be possible to see sequent change.

Aside from the clue to cultural assignment provided by dating, many Early Kachemak sites are readily identified through the occurrence of one artifact type--the necked or plummet type grooved stone. This artifact is reasonably common and readily survives at eroded sites, hence a large number of presumed early Kachemak components have been recognized almost on the basis of it alone.

Temporal Considerations and Comparisons

Inasmuch as the Late Kachemak tradition is dated to well beyond the time of the Old Kiavak Site, we will not be concerned here with sites in the upper date range for the tradition. The Old Kiavak radiocarbon dates suggest occupation between about 3500 BP and 2200 BP (uncalibrated), exclusive of the later Koniag component. However artifact recovery from the lower levels is sparse, and thus the majority of the Old Kiavak assemblage comes from levels younger than the earliest radiocarbon dates or even the 2750 BP date (S-3488). The upper limit for the Early Kachemak component at Old Kiavak is based on extrapolation from the 2400 BP radiocarbon determination (S-2998) and the fact that by about 2100 BP assemblages at other sites (Crag Point KOD-044, Three Saints KOD-083, Old Karluk KAR-031) clearly are Late Kachemak in complexion. As an expedient working arrangement, we will divide the Early Kachemak time range into a later period dated to the time range 2150 BP--2950 BP uncalibrated and into an earlier period encompassing the rest of the remains attributable to the Kachemak tradition back to its inception. Only "raw" dates are

given here. Mills (1994) has compiled nearly all the radiocarbon dates cited here and provides their calibrated ages with one and two sigma brackets.

Later Early Kachemak

A modest number of Kachemak tradition sites have been dated to the later time range. As the objective here is to arrive at an understanding of the inception or "origins" of the tradition, it will not suit our purpose to discuss this material. Some sites show continuities from the preceding Earlier Early Kachemak, as reported in a later paragraph. Others are noted briefly, for the record. I expect this record to show, when we move through the data, that at present the Earlier Early Kachemak period is poorly represented away from Kodiak Island.

- KOD-172, on Chief Cove Island, has 2 dates of 2075 and 2180 BP for the middle levels of a 1.2 m thick deposit (Nowak 1978:35-39). The assemblage is generalized Kachemak tradition.
- A layer at Old Karluk KAR-031, with little associated cultural material, overlying an Ocean Bay component and underlying a late Kachemak layer is dated at 2540 BP (Jordan and Knecht 1988).
- Karluk site KAR-039, test pit, 2650 BP (Jordan and Knecht 1986). No assemblage has been described for this test.
- Kizhuyak Bay site KOD-324 has a date of 2700 BP, but no collection of note. There also are older dates from the same site (Crozier 1987).
- Blisky site KOD-210 on Near Island may have an Early Kachemak component judging from the recovery of a plummet-type grooved stone from the beach and flaked chert artifacts from test excavations made in 1989 and 1994. However, a radiocarbon date on charcoal from the base of the site collected in 1994 is only 2010 BP (1945 BP calibrated; Beta-77804, author's unpublished data).

Off Kodiak Island, on the adjacent Pacific side of the Alaska Peninsula, in Cook Inlet and in Prince William Sound there are the following components:

- Chugachik Island SEL-033 (Kachemak Bay) Kachemak II or Sub-III component is dated at 2310, 2740 BP. These dates are for the base of a midden; the top of the midden is 1705 BP (W. Workman 1987, K. Workman 1987). K. Workman (1977) advisedly sees closest similarities with the continuum Kachemak II and Sub-III. This placement, as well as my viewing of the artifact plates, suggests, as do the radiocarbon dates, that the Chugachik assemblage covers only the end of Early Kachemak plus part of Late Kachemak. The Early Kachemak hallmark, the plummet-type grooved stone, is absent from this assemblage, and, the radiocarbon assays notwithstanding, the assemblage contains nothing suggestive of de Laguna's original Kachemak I stage. Therefore, the 2740 BP Chugachik Island date appears to be too old unless de Laguna's 2706 BP Kachemak I date is too young.
- Yukon Island Great Midden (SEL-001), Kachemak I, 2706 BP. The date is of uncertain accuracy because it was run on a preserved artifact (de Laguna 1934, 1962; W. Workman 1987). The type assemblages for the Kachemak tradition are the Yukon Island, Cottonwood Creek and other assemblages from Kachemak Bay, outer Cook Inlet, reported by de Laguna in 1934. In the series of sequent stages of

Kachemak I, II, Sub-III and III (IV is post Kachemak tradition) Kachemak I and II can be regarded as Early Kachemak, possibly too Sub-III.

- Moose River (KEN-043), 2180 and 2330 BP, and Nilnunqa (KEN-066), 2755 BP, are both Riverine Kachemak. There are later dates from the same sites (Reger 1993, Reger and Boraas 1993). The multicomponent Nilnunqa site also has an earlier date not linked with a definitive assemblage. This site is of especial interest inasmuch as it fits well within the Old Kiavak range and, if the error margin is not taken into account, at 2755 BP it is the oldest date attributed to the Kachemak tradition for the Cook Inlet region. Unfortunately, all other Nilnunqa dates are younger than 2050 BP (Reger and Boraas 1993 Table 1). In a summary discussion of the Riverine Kachemak, Reger (1993) states that this aspect of the tradition has been dated on the Kenai River from 2750/2850 BP to 1000 BP. This, he notes "mirrors radiocarbon date ranges from the Marine Kachemak occupations around lower Cook Inlet" (1992:8). But the early end of this chronology is anchored on single dates or dates that have large error ranges.
- We may include here another Riverine Kachemak component, the Merrill Site (KEN-029) located near Soldotna, though D. Reger rejects a 2460 BP date for the top of the site and considers that the site largely postdates deeper levels dated to 2245 BP and 2135 BP (Reger personal communication to D. Clark). The assemblage also has a Norton culture complexion. Merrill is the most substantial assemblage from the Upper Cook Inlet region, and though it lacks organic preservation it may be regarded as a landmark for middle to late Riverine Kachemak (Reger 1978).
- The Palugvik site (SEW-056) has new dates of 2310 BP and 2370 BP for the early part of the Late Kachemak Palugvik phase, slightly older than the first dates obtained for that site (de Laguna 1962). The original Palugvik site excavations by de Laguna may have sampled mainly younger deposits (de Laguna 1956, Yarborough and Yarborough 1993).

Earlier Early Kachemak

We next examine occupations dated to the earliest Kachemak time range. On Kodiak Island these are as follows:

- The lowest levels at Old Kiavak, as described earlier.
- Karluk Site KAR-048, 3050 BP. No assemblage has been described.
- Crag Point (KOD-044), 3150 BP for the lower statum excavated in 1964 and 3160 BP and 3340 BP for hearths excavated in 1967. More or less associated are flaked chert artifacts, typologically generalized utilitarian artifacts, and a plummet grooved stone, all relatively sparse (unpublished data provided by R. Mills). Above this there are Later Early Kachemak remains in House Floor 1B, and part of Layer 3 which has dates of 2190 BP and 2380 BP. The earliest dates from Crag Point and Old Kiavak are closely comparable, and this shows that there is no particular reason why the dates from the latter site should not be accepted, especially in the light of an even older date from AFG-088. The Crag Point assemblage is mainly Late Kachemak, but it also plays an important part in defining the Early Kachemak tradition.
- Uganik Island (KOD-224), 3130 BP and 3365 BP from the top of Level 6 and base of Level 5 respectively, identified by Nowak (1979) as Takli or late Ocean Bay, not as Kachemak. However, the small artifact collection leaves cultural affiliation open to interpretation.

- Kizhuyak Bay (KOD-324) with dates of 3520 BP and 3630 BP, as well as older dates. Crozier (1987) proposes an Ocean Bay II identification but artifact associations are too few to set cultural placement.
- AFG-088, at the mouth of the Afognak River, with radiocarbon dates of 3530 BP, 3490 BP and 2780 BP uncalibrated or 1880 BC and younger calibrated (Table 6). This is the earliest of the Early Kachemak dates and, significantly, the assemblage has some Ocean Bay II attributes. This site forms a key link in our later discussion of the development or "origins" of the Kachemak tradition.
- Malina Creek AFG-005. At this multicomponent site the basal Ocean Bay II occupation is sealed off from overlying Kachemak, Koniag and historic deposits by a volcanic ash layer (Richard Knecht personal communication to D. Clark 1994). Knecht suggests that Layer 6, which immediately overlies the ash, is a likely candidate for a transitional Ocean Bay-Kachemak occupation. Level 6 contained many ground slate artifacts clearly of Ocean Bay II style as well as apparent Early Kachemak and Late Kachemak artifacts. Radiocarbon dating and analysis has not been done at the present time (1996).

In adjacent regions there are only the following sites dated earlier than 2950 BP:

- SEW-517, dated to 3035 BP, is a rockshelter at Prince William Sound. Its age suggests Kachemak affiliation but artifact recovery is too sparse to establish cultural affiliation (Haggarty, Wooley, Erlandson and Crowell 1991:167, 175, 187).
- The Uqciuvit phase component at the Uqciuvit site (SEW-056) at Prince William Sound, dated at 3380 BP and 3810 BP, probably is not Kachemak. It could be Ocean Bay but artifact recovery is too scant to establish cultural affiliation (M. Yarborough and L. Yarborough 1993 and personal communications to D. Clark September 1994).

Similarly, a piece of sawn slate and flakes indirectly referenced to a 3770 BP uncalibrated radiocarbon date (for different layer than the provenience of the slate) from rockshelter SEW-430 is suggestive of the Ocean Bay tradition (M. and L. Yarborough personal communication to D. Clark September 1994), but these layers also could bear information on the development of the Kachemak tradition as they only slightly precede the oldest Early Kachemak dates from Kodiak. Presently there are no diagnostic collections from Prince William Sound that date within an earlier Early Kachemak time frame. According to the Yarboroughs, archaeological and geological investigations suggest that after late Ocean Bay II times neoglaciation precluded most of the Sound from being occupied until about 2400 BP. This geological history likely precluded Prince William Sound from being the seat of Early Kachemak development, though one may query whether glaciation did not displace a significant number of (incipient Kachemak?) people causing them to settle at destinations on the outer Kenai Peninsula, Cook Inlet and Afognak Island.

- Takli Site (MK12) XMK-018, on the Alaska Peninsula adjacent to Kodiak Island, 2810 BP and 2910 for the Takli Birch phase, with earlier occupation also present. Takli Birch is not clearly Kachemak tradition though some Kachemak artifact types are present among a majority of late Ocean Bay types. The Takli Birch phase arose before the earliest Early Kachemak and continued to some time after 2810 BP and 2910 BP (uncalibrated) at the Takli Site (G. Clark 1977) (see also Hook Point site). By the end of the phase, Takli Birch shows an inclination towards the Kachemak tradition in some artifacts such as labrets

and ulu blades. But it developed into something else technologically and never fully became Kachemak. T. Birch is basically distinct and separate from Kachemak and appears to be part of the Ocean Bay tradition. That tradition, or an outgrowth more Ocean Bay-like than Kachemak-like, lasted longer on the Alaska Peninsula than it did on Kodiak. This case of a variant developmental path out of the Ocean Bay tradition provides a very instructive comparison with Kodiak.

- Hook Point Site (MK-14), near Talki site, dated to 3470 BP, has a Takli Birch phase component clearly related to Ocean Bay II (G. Clark 1977). The site shows that on the Alaska Peninsula Ocean Bay II (T. Birch) persisted to a later date than it did on Kodiak, though with changes (G. Clark 1977).

Conclusions to Temporal Considerations and Comparisons

Workman (1993:13 and elsewhere) observes that the Kachemak Tradition is earliest on Kodiak. The foregoing review supports this conclusion, though the evidence is largely a lack of evidence outside of Kodiak Island. Earliest dating is now documented at three Kodiak sites (Old Kiavak, Crag Point, AFG-088) and possibly two others (KOD-224, KOD-324) where artifact associations are not clear. Kachemak dates older than 3000 BP for Cook Inlet, the Kenai Peninsula and Prince William Sound are very tentative, and there is none from the Alaska Peninsula. But even in the cases of Old Kiavak and Crag Point the artifact assemblages associated with the earliest dates are small. We can safely state that by 3500 BP (3800 BP calibrated age) Early Kachemak occupation does exist on Kodiak Island, on Afognak in the transitional Ocean Bay-Kachemak phase (Afognak phase) if not at Old Kiavak. To date, Early Kachemak is later in the Outer Cook Inlet-Kenai Peninsula areas, but this may be an artifact, i.e., an exploration gap. It likely was present, at least in its later aspect, in Prince William Sound but needs to be further documented there. Early Kachemak is not found on the Alaska Peninsula where, instead, other cultures persisted, though eventually much Late Kachemak technology was adopted by Pacific coast Alaska Peninsula peoples. In Outer Cook Inlet, including Kachemak Bay, there is an early fourth millennium BP hiatus in the sequence between Early Kachemak and the Arctic Small Tool tradition. When the gaps are filled we may find that throughout the region events associated with the inception of the Kachemak Tradition were essentially coeval.

In the next sections we will first formulate a working definition of the Old Kiavak phase. Following that, we will describe in more detail a number of proposed Early Kachemak components already introduced in the preceding discussion. This will help fill out the picture of the content and variability of Early Kachemak. Finally, attention will be directed to the question of "origins."

The Afognak Phase and other Early Kachemak Components on Kodiak Island

Most Early Kachemak components on Kodiak Island are poorly sampled. Not many are known, considering that more than 400 sites have been reported for the archipelago. They often underlie Late Kachemak and Koniag phase deposits, and therefore the purity of assemblages frequently is open to question.

Early Kachemak deposits tend to lack organic preservation and characteristically are "black" (dark gray). When wet, they turn into a charcoally muck, dirty and very messy to excavate. Several sites are discussed here, beginning with an Afognak site which appears to be the earliest of the lot and is one that significantly shows evidence of an Ocean Bay-Kachemak transition (Table 14).

Afognak River: The Afognak phase, an Ocean Bay/Early Kachemak Transition

Very early Kachemak tradition occupation is documented at the mouth of the Afognak River (Workman and Clark 1979:257-265 & figures). This attribution made more than 20 years ago is reinforced by the radiocarbon date of 3530 ± 80 BP obtained on a charcoal sample taken from a test pit excavated in 1994 and two additional early dates on charcoal samples from test pits excavated in 1995 (Table 6). The original surface collection made along the shore in 1971, and subsequent surface collections, come from a thin deposit that had been eroded out from under the roots of the spruce forest at AFG-088 (originally published as Afo-136). The site was observed then as a dark-stained soil layer several cm thick seen exposed along the shore and by peering under undercut banks supported by tree root systems. In 1994 only bedrock and slumped banks were seen along the shore. The main reach of the site is 82 m long. This does not include the up-river end of the site where the shore makes a 90 degree turn, and where grooved stones, cobble manuports, ground slate ulu fragments, and boulder spalls (none counted in Table 13) were observed. Immediately down river from the testpitted location (below) there is a rocky protrusion of the shore line. It forms the nominal limit of the site, but two notched cobbles were found immediately below this point, and some metres farther down the river there was a cluster of 8 boulder spalls, 2 elongate cobble malls, a sawn slate fragment, a long slender tip fragment, 3 large notched shingles, and rare chert flakes. These items link this 50-m-long reach of the shore with the main site. They are included with the AFG-088 surface collection.

The original 1971 collection numbers approximately 250 items, including 161 notched stones, but not counting 253 battered chunks and flakes of chert. The number now considered includes 594 items, of which 338 are notched stones, plus 372 chert flakes and pieces of shatter. There also is considerable broken graywacke and other stone at the site (not collected), but little of this rock bears positive evidence of having being utilized as tools. Some of the heavy artifacts listed in Table 14, especially manuports and little modified cobble mauls, were discarded in the field at the basecamp or left at the site. The local chert, which strongly predominates, is a refractory, flawed red chert, nearly a jasper (defined as opaque), available in the stream gravels at the head of nearby Marka Bay and at some greater distance from outer Raspberry Strait.

In 1994 I revisited the site for a few hours in the context of the Afognak Native Corporation "Dig Afognak" ecotourism project. There had been some erosion since the site had been collected in 1971 (it is not known if any others had visited this unobtrusive site), but very little was found in the original collection area: 14 notched shingles, a small adze bit, some scraped and ground slate including an Ocean Bay-II type sawn strip blank, a fragment of a possible sculpted-neck cobble plummet, and 25 pieces of red chert shatter. However, one reach of the site, evidently not collected in 1971, yielded 74 notched shingles, chert flakes and

shatter, some ground slate, and numerous cobble spalls and ovoid cobble manuports (mostly mauls, some pitted, not collected). They are accounted for with 1971 and 1995 surface collections in Table 14.

A 60-cm-square test pit was excavated in the sloping bank in 1994 behind the most concentrated surface distribution 2.5 m in from the present edge. By 3 pm the weather had deteriorated to the point of bringing down the shades of evening, so the pit was not completed into the sterile substrate. But it had progressed to 53 cm depth (average, taking the slope of the ground into account, not including 30 cm of Katmai volcanic ash) and had yielded from a small volume of matrix heavily charged with broken rock, 10 notched shingles, a fragment of a small unfinished or dull ulu blade, another slate fragment scraped and coarsely ground on one face, a fragment of a sawn slate strip, a piece of red chert, an elongate pebble abraded flat on one edge, and the charcoal sample that subsequently was dated to 3530 BP. The pit thus contained Kachemak type notched shingles associated with slate worked in a technique common to Ocean Bay II.

However, it was desirable to obtain a more substantive demonstration of this relationship and to back up the single radiocarbon date with additional age determinations. In 1995, again with the assistance of the Dig Afognak project and its participants[2], I was able to excavate at AFG-088 for two days, complete a second and third test pit and make further surface collections.

Test Pit 2, was a 111-cm-square pit (at the base, 125 cm square at the top) located adjacent to the previous year's Test Pit 1. At a little over 50 cm depth cultural deposits ceased at a discrete volcanic ash layer, 6 cm thick where undisturbed, that overlay a thick deposit of soily gravel (Table 13). As in the case of TP1, artifacts were present from just below the Katmai ash, dating to 1912, and notched shingles were especially abundant in the top 10 cm level. But the frequency of artifacts decreased markedly in the level above the tephra. We anticipate being able to key this volcanic ash with the dated regional sequence of tephras. The archaeological and tephra chronologies should be mutually complementary. It is noteworthy in the present case that there is one apparently discrete volcanic ash whereas at the base of most sites there is a composite "butter clay" resulting from the accumulation of several tephras. Again, as was the case in 1994, the test yielded an artifact assemblage bearing Kachemak, Ocean Bay and combined attributes: notched shingles, the stem of an OB II-style slate point, and presumed Kachemak ulu blade fragments worked by the Ocean Bay scraping technique. A charcoal sample obtained at the base of the anthropogenic deposits 45 cm below the base of the 1912 volcanic ash was dated at 3490±90 BP, which confirms the date obtained on a different sample from TP1. The 2 sigma calibrated range of this date is BC 2025 to BC 1540 (which breaks into two dates because of a reversal in the calibration curve) and, for the TP1 sample it is BC 2035 to 1660. These dates fall close to and within a flat and negative area of the calibration curve (Stuiver 1993 as provided by Beta Analytic) and are better interpreted liberally than literally. The significance of AFG-088 derives from the context and composition of the assemblage in conjunction with the dates.

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[2] In particular, by archaeologists Megan Partlow and Patrick Saltonstall and camp manager Richard Roland.

TABLE 13. SOIL SEQUENCE IN TP2. AFG-088

Thickness	Description of Deposit
Thin	Turf
13 cm	"Katmai" ash gray component
18 cm	"Katmai" ash tan component
9± cm	Medium-gray sandy soil (cultural material present)
20± cm	Dark-brown soil (cultural material present)
14±cm	Dark-brown soil with poorly defined zones of light-brown soil (admixed old tephra) (cultural material present)
6 cm	"Butter clay" tephra, locally mixed or has dark gray streaks at top (6 cm for discrete undisturbed layer, greater elsewhere) Base 56 cm below Katmai at inner R corner of TP
33 cm	Dark gray soily gravel (cultural material absent)
	Lighter gray soily gravel (weathered till, not adequately tested)
	Bedrock (not reached by test, exposed elsewhere at site)

Dashed line indicates fuzzy boundary between layers.

Test Pit 3 was a smaller unit, measuring 70 by 80 cm at the base, placed on level ground slightly farther back from the edge of the bank than the preceding tests. The objectives were to see if there was a change in the types of artifacts (e.g.; use of the terrain) farther back from the bank and where occupation shifted from sloping to level ground. To reach the nearest level ground it was only necessary to move 3.6 m up the shore from Test Pit 2 and 5.13 m in from the eroded bank (TP2 was 2.13 m in from the erosion scarp). As had been anticipated, the frequency of notched shingles decreased from approximately 100 per cubic meter in TP2 (whole pit, 115 without bottom level that had no notched shingles) to 25 per cubic meter in TP3, but the frequency of other artifacts also decreased to about the same degree. Cultural deposits in Test Pit 3 ended abruptly on a glacial till hardpan 40 cm below the Katmai ash. It is apparent that excavation for a

house pit or other feature had removed tephras and other deposits down to the till (only 360 cm separate adjacent edges of TP3 and TP2 where there was tephra and thick soily gravel below the tephra), though a larger excavation is required to confirm this interpretation. If attribution to a structure is correct, then the hypothesis of different use of level ground at the site is verified.

The base of the proposed structure, from which a charcoal sample was collected just above glacial till, was expected to date somewhat younger than the basal samples from TP1 and TP2. At 2780±110 BP (BC 1250 to BC 785 calibrated at 2 sigma error) it did, though the spread between dates, in the order of 600 to 800 years is greater than had been anticipated. Nevertheless, the younger date helps establish that there was temporal depth to the occupation of AFG-088 while the artifacts support placement within a single Early Kachemak component. The younger date remains well within the Early Kachemak date range established elsewhere. Further dating is needed to better establish the duration of occupation at AFG-088.

While this collection lacks some diagnostic Early Kachemak types, the positioning of the site on the Afognak River estuary between Ocean Bay and Late Kachemak sites, where sites tend to be seriated spatially, anticipates an Early Kachemak age. The assemblage is neither distinctly Ocean Bay nor Late Kachemak. Thus, from the artifacts there is ample reason to identify the site as Early Kachemak (without the radiocarbon dates) with some attributes of Ocean Bay II. The assemblage is proposed for a new local phase of Early Kachemak, the "Afognak" phase. As has been noted, the salient aspect of the Afognak phase is its transitional Ocean Bay-Kachemak complexion, incidentally with a bias towards fishing at AFG-088. Initially I was concerned that two components, mixed through erosion, might be present, but the collection from the test pits shows that the co-occurrence of Early Kachemak and otherwise Ocean Bay artifacts is (at least to some extent) valid, and radiocarbon dating of the site thus far excludes the possibility of any Ocean Bay component being present. The numerous notched stones are larger than those from the other sites, certain Early Kachemak sites excepted. At 10 cm average length, (and 127˚g ave. weight for the 1994 collection), reaching the astounding maximum of 16 cm, they compare closely with notched shingles from Crag Point, Woody Island (author's unpublished data) and de Laguna's (1934) large series from the Early Kachemak stage II. The moderately abundant chert industry may indicate links with the antecedent Ocean Bay tradition. Nevertheless, on northern Kodiak, and at Kachemak Bay, unlike the case on the southeastern and southwestern part of the island, a high incidence of chert flaking does occur in the Kachemak tradition. Heavy implements including unformed cobble mauls, boulder flakes and roughly flaked objects of coarse stone characterize this collection, though poorly defined chert artifacts and ground slate, including ulu blades, projectile points and double-edge blades, also are well represented.

A closer look at some of the artifacts, especially those collected in 1994 and 1995 is in order. Further details of the 1971 collection at AFG-088 are given elsewhere (Workman and Clark 1979). In Table 14 I have both combined and drawn apart categories of past analyses in order to emphasize certain elements of technology such as scraping of slate and saw cuts on slate. Adzes are represented by numerous greenstone specimens, largely fragments. These definitely are unlike slender elongate bifacially flaked Ocean Bay adzes including one collected in 1995 from an Ocean Bay site located down-river from AFG-088. Some bits,

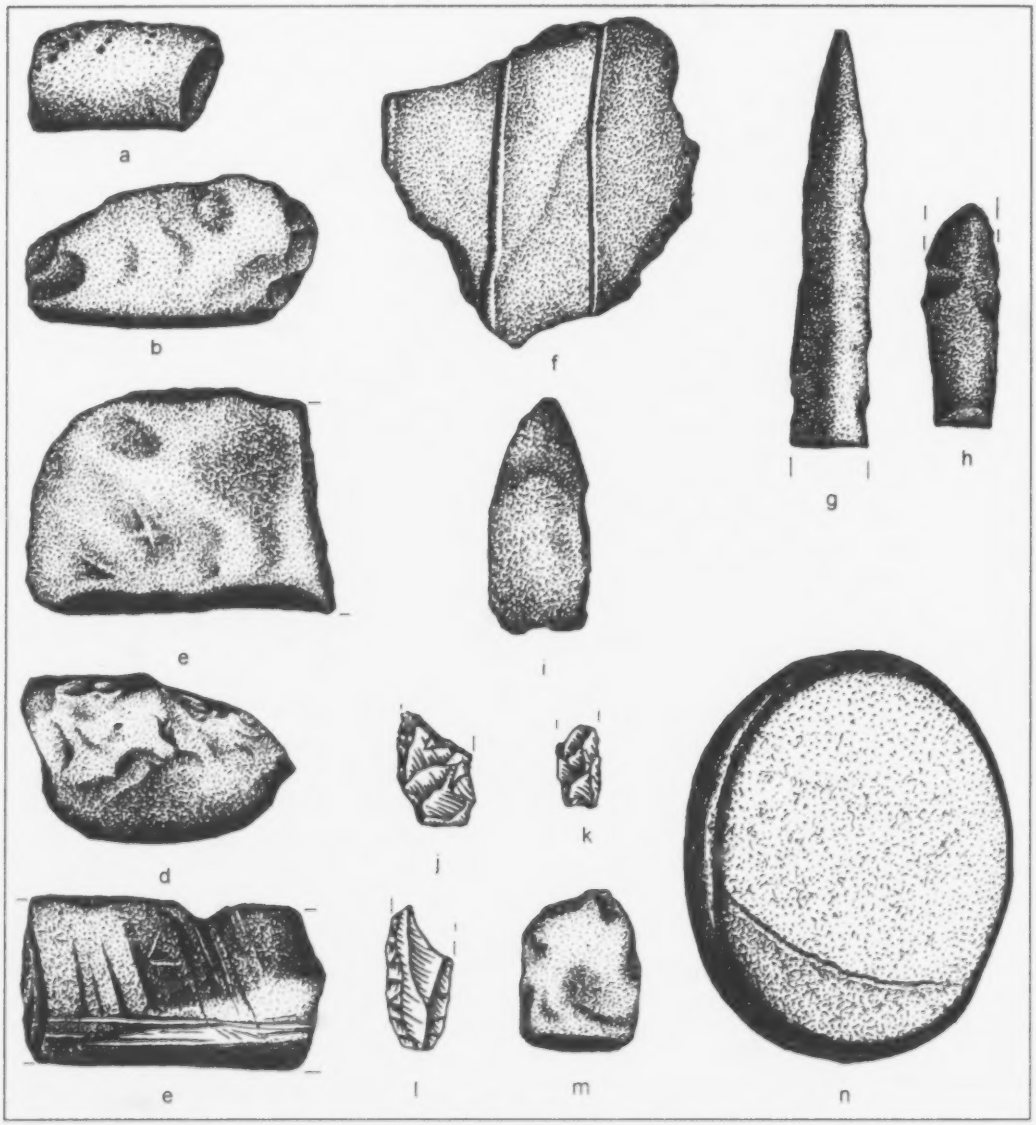

Figure 24. Artifacts from AFG-088. a-d: ulu blades; e: section of scraped and sawn slate blade in Ocean Bay mode; f: slate sheet sawn to produce blanks in Ocean Bay mode; g: slate bayonet tip; h: slate point fragment with stem in Ocean Bay mode; i: flaked graywacke object; j-l: chert biface blade or point fragments; m: thick greenstone adze bit; n: ochre grinder. Scale varies: b-c 50%, d-e 56%, f 68%, g-h, n 60%, k 54%, m 64%.

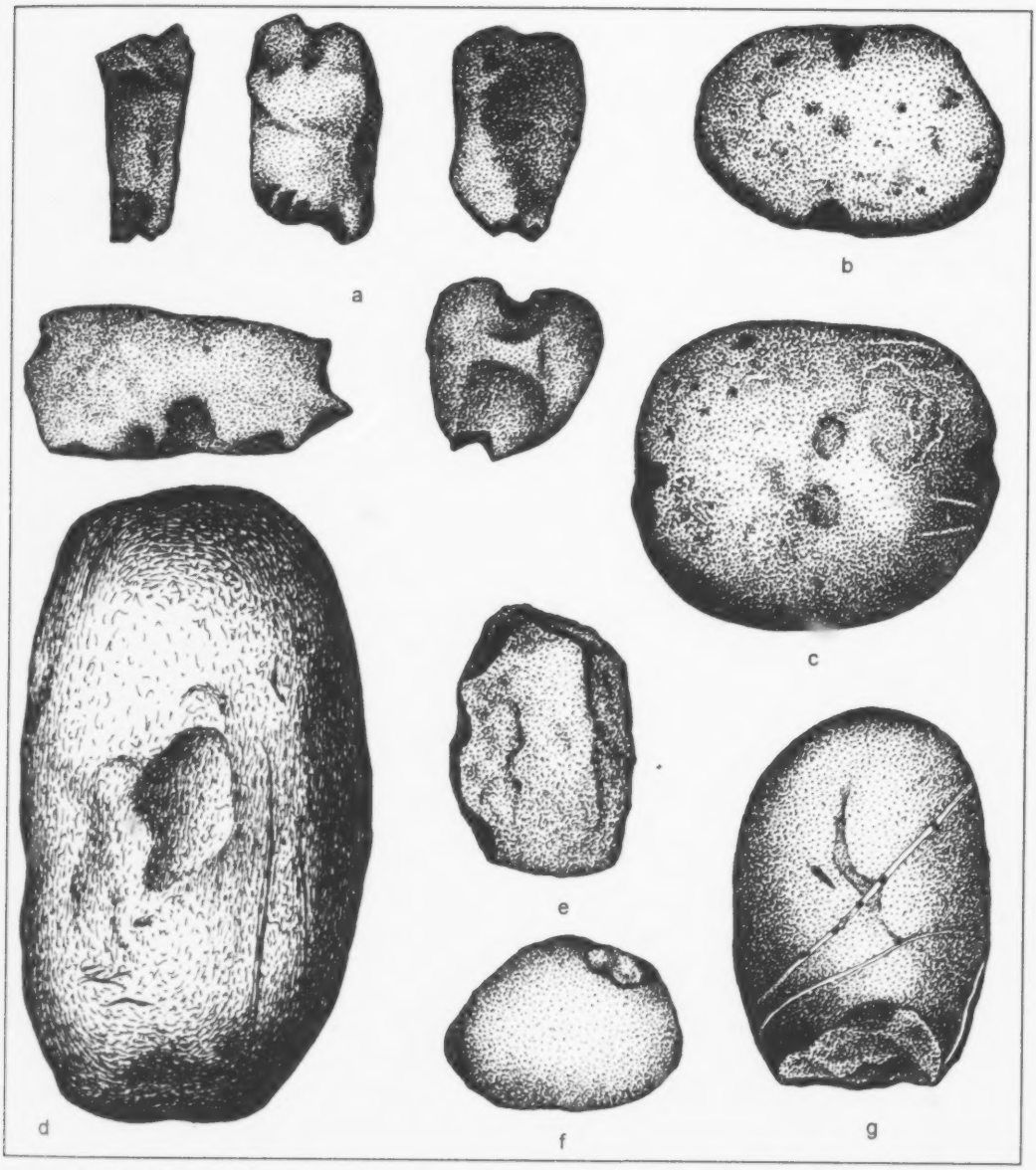

Figure 25. Artifacts from Afognak site AFG-088. a: notched shingles (longest is 160 mm); b: side-notched cobble; c: end notched cobble; d: cobble maul; e: graywacke slab bluntly trimmed around the edges; f: cobble spall; g: chopper-hammerstone. Scale varies: a 31%, c 43%, d 46%, f 35%, g 56% natural.

including a tiny 3.7 mm by 2.5 cm specimen, are suggestive of small Early Kachemak adzes, but others are larger and compare with Koniag phase adzes. However, the assemblage does not otherwise appear to be contaminated by any Koniag phase material. The Early Kachemak diagnostic, the plummet grooved cobble is not unequivocally present, but there appears to be a fragment of the sculptured neck variety (Type 7a). Flaked chert is common but includes only a modest number of implements, almost none that is diagnostic. Chert is more abundant, relative to other artifacts, in the surface collection than in the test pit assemblage, but that may be a collection bias, and the test pits represent only one area of the site. Abundant large pieces of firecracked rock suggest that the Earliest Kachemak people may have had the vapor sweat bath, which contrasts with late Ocean Bay.

Considerable significance can be attached to form and workmanship in the ground slate industry. There are fragments of a parallel sided sawn blanks, partially worked down through scraping--recovered from both the beach and test pits. This definitely is an Ocean Bay II artifact type. Traces of sawing also are seen on a few other implements (for instance, to form the stem on a large point, 1971 collection, and on the face of a double-edged knife). Some of the boulder spalls are smoothed at the edge in the manner of Ocean Bay stone saws. We noted that at Old Kiavak in the lowest levels ulu blades tend to be small, are not especially numerous and lack drilled perforations, whereas in Ocean Bay II ulu blades may be altogether lacking, with uncommon exceptions from the most recent levels. At AFG-088 ground slate is moderately abundant, though most of it is fragmented and edges are battered from beach rolling. There are no drilled perforations among the nearly 100 ground slate pieces (exclusive of pointed objects, in which class drilling always is uncommon). Ulu blades definitely are present. From the 1994 and 1995 collection we can identify more or less complete examples measuring 7, 7.4, 8, 8.5 (2 ex.), 9+ (estimate 13 cm complete), 10.4, 12 and 15 cm long. The last specimen is bar-shaped or essentially straight edged. Eighteen Old Kiavak ulu blades similarly range in length from 6 cm to 14 cm with a mode at about 9 cm (An additional blade from Level 1 is longer but probably is Koniag.) On a large number of ulu specimens and slate fragments traces of an early stage of fabrication, i.e., coarse grinding and scraping, remain visible after whatever finishing was done and erosion through beach rolling has muted manufacturing striae. Such traces were not recorded on Old Kiavak specimens but are a diagnostic feature of Ocean Bay II technology. The problem of distinguishing between coarse abrasion striae, which occur on slate of all periods, and Ocean Bay mode scraping traces caused me some concern, especially when attention had to be limited to beach rolled specimens. However, as further surface collections were made, and artifacts were recovered from the test pits, the sample, from both contexts was seen to include unequivocal scraped slate. Accordingly, it was not necessary to address the question of periodizing coarse grinding striae. Finally, turning to finished implements, the format of some ground slate points, from both shore and test pit contexts, is in the Ocean Bay II mode. Thus Ocean Bay techniques for working slate and in some cases Ocean Bay styles of slate artifacts survive in Early Kachemak or transitional implements at AFG-088.

Assemblage differences might occur on a functional basis. The Afognak site occupies a river-mouth locality and probably was utilized for salmon fishing. Owing to thick ice formation, the inhabitants likely would have lived at a different winter location, on the open coast. The abundant mauls, many of them simply

cobble manuports, could have been used for installing trap or weir stakes. Nevertheless, other fishing technologies also were used. The abundant large notched shingles are probably salmon net weights. All visible notched shingles were picked up in 1994 but in 1995 there were again abundant specimens on the same beach. As we already had statistics for this artifact, the latter were not collected or even counted. (Stormy weather had stirred stones along the shore, exposing further artifacts.). By way of contrast, the Old Kiavak site is situated on a bay with access to the open ocean for sea mammal hunting, but is concomitantly located next to a tidal inlet that in some ways makes being there equivalent to being at a salmon stream. Thus, Kiavak could have supported year-round occupation, and the artifacts should show that.

AFG-088 is significant on three counts: it is transitional Ocean Bay-Early Kachemak in a manner that indicates technological continuity or bridging of these two traditions (with presumed concomitant ethnic and linguistic continuity), it sets the beginning stage of the Kachemak tradition and helps to explain Kachemak "origins", and it helps to define a functional variant (salmon fishing camp) of Early Kachemak.

Crag Point

At Crag Point (KOD-044) a "black Kachemak" layer was encountered as a basal component in 1964 (Clark 1970:75). This site was further excavated in 1987 by a Bryn Mawr-based project (R. Jordan personal communications to the author 1986-1988, J. Simon 1992, R. Mills personal communication 1992-93, 1994). The later excavation did not encounter any separate lower black deposit. The layer sampled in 1964 may have been eroded away entirely. Nevertheless, an Early Kachemak occupation, not readily apparent at the time of excavation in 1986, is confirmed by a number of third millennium BP and late fourth millennium BP radiocarbon dates (Mills 1994). In 1994 R. Mills and I examined the collection at the University of Alaska, and it appeared that the number of artifacts associated with the earliest radiocarbon dates was small and the items not distinctly different from the principal, Late Kachemak, assemblage.

The 1964 artifacts are listed in Table 14. They consist primarily of large slightly notched beach shingles, cobble spalls, and plummet-type grooved stones. Several flakes of red chert also were recovered. Possibly some chert artifacts found on the beach, a water-worn square-stemmed point recovered from the Late Kachemak component, and a stemmed point found at the interface between the Early and Late Kachemak layers also are derived from the Early Kachemak occupation. The cobble spalls are not extensively reshaped, unlike the case at Old Kiavak, but some appear to have been utilized. The grooved plummets tend to be large, generally above 10 cm and as high as 16 cm long though one is a mere 6.2 cm long. The roughly or incipiently notched shingles are conspicuously larger than the notched pebbles from Late Kachemak deposits at Crag Point and elsewhere, an observation that is in accord with Early Kachemak collections from several sites, Old Kiavak excepted. Eight specimens range from 7.6 to 11 mm long and average 9.2 mm compared with 5.5--6.2 cm (various lots) for Late component Crag Point notched pebbles and the more intermediate 6.8 cm for Old Kiavak. Note that a small increase in length usually results in a large increase in mass. The 1964 "Black Kachemak" component has been dated at 3150±80 BP uncalibrated (Beta-94894) or BC 1415 calibrated.

TABLE 14. IMPLEMENTS FROM EARLY KACHEMAK SITES, KODIAK ISLAND

Implement	Crag Point	AFG-088 Tests	Shore
Ground slate point/lance/knife	0	3	23
Lg. double-edged ground slate blade	0	1	2
Sawn slate strip (blank)	0	1	2
Other slate with saw cut	-	0	5
Slender barbed bone point	2[1]	0	0
Plummet-type grooved stone	7	0	2?
Grooved cobble	1	0	4**
Bi-notched cobble, large	0	0	3
Biconically perforated stone	0	0	1
Large notched shingles	7 or 8	86	252+NC
Fish hook barbed part	1	0	0
Ground adze bit & preforms	1 small	0	10
Ochre grinder handstone	-	1?	1
Hammerstones	present	2	9
Maul Type 1a (Heizer's)	1[1]	0	11+NC
Boulder spalls	20	1	25+NC
Leafshaped blade made from a boulder flake, 10 cm long	-	-	1
Tabular shingle modified to an elongate ovoid, 9.5 cm long	-	-	1
Siltstone abrader	0	1	1
Pumice/scoria abrader	1	2	0?
Ground slate ulu & fragments	0	6	21
" " with possible Ocean B scraping	-	6	4+
Other single edged ground slate blade	0	-	3
Other ground slate fragment	3	4	43
Scraped slate frag., Ocaan B mode	-	8	3+
Chipped ulu-shaped scraper	0	0	4
Chipped slate blade, elongate, rough	-	0	3
Heavy flaked chopper, coarse stone	0	8	1
Chert flakes	present	33	339
Chert cores	0	0	8
Chert implements & preforms	1	2	18
Stone lamp	0	1[2]	0

[1] Context possibly is Late Kachemak.

[2] 2 large plus 2 smaller, the latter two, not collected from a location slightly separated from the other artifacts at the upriver end of the site; from same separate location plain lamp generalized, not collected.

"-" Indicates artifact or attribute not recorded in analysis, but not necessarily absent as the several separate analyses variously targeted certain attributes and fail to report on others.

Monashka Bay

Brown-colored, soily, Koniag phase deposits overlay dark gray deposits and a fishbone midden band of the Kachemak tradition at Monashka Bay (KOD-026) (Clark 1974b). Recovery of plummet-type grooved stones attests to the presence of an Early Kachemak occupation. The base of the Monashka Bay site presents an enigma somewhat comparable to Old Kiavak. Charcoal or stained streaks and rocks in the lowest, sandy layer appear to have been emplaced by human activity, but definitive artifacts are lacking. Later excavation of the site, in 1989, by Donta (Donta personal communication to D. Clark) penetrated both Koniag and Kachemak tradition deposits, but radiocarbon dating, to 1680 BP and 1570±50/60 BP (Mills 1994: Table) indicates that the house he excavated is Late, not Early Kachemak. Evidently, there are both Late and Early Kachemak components at Monashka Bay. Distinctive artifacts of one or the other component (exclusive of the Koniag component) include grooved plummets, other grooved cobbles, small bone wedges, abundant cobble spalls, ground slate ulus, uncommon small notched pebbles, Type 1a cobble maul, needle fragment, half of a compound harpoon socket, and a single flaked chert implement. This collection differs from others noted here in the absence of flaked chert artifacts, which also can be taken as evidence that Early Kachemak is represented to only a minor degree.

Uyak Site

Any reliable description of the earliest occupation at the Uyak site (KOD-153) may be beyond resurrection. Hrdlicka (1944) discusses the "first occupants," but because of probable offlap resulting in some parts of the site being first occupied much later than other areas, we cannot be certain that basal refuse and features everywhere belong to the earliest inhabitants. Work done by Steffian in the late 1980s enhances the interpretation of Hrdlicka's data, but only for Late Kachemak (Steffian 1992). Hrdlicka divided the Lower Levels collections into a deeper and a shallower lot, by means of colored pencil marks, but when he analyzed the collection Heizer (1956) felt that the provenience data were so unreliable that he lumped the lots into a single assemblage. Possibly, though, reexamination of the collection according to Hrdlicka's insights might yield clues about the site's earliest inhabitants.

For the earliest levels, Heizer (1956:18-21) records small single-room houses with slightly sunken floors and stone slab hearths, and flexed burials. Hrdlicka (1944:221, 322 and elsewhere) lists stone lamps, often decorated, plummet-type grooved cobble, chipped slate points and knives [ulu-shaped scrapers], relatively few ground slate implements, numerous bone wedges, small notched pebbles, an absence of adzes

("axes and chisels"), absence of unbaked 'pottery' (clay-lined pits) and lack of evidence of whaling. This information is not wholly in accord with that from other sites. For instance, clay-lined features are present early at Old Kiavak. Hrdlicka noted that fire-cracked rock possibly indicative of the steam sweat bath was present in the earliest layers (as at AFG-088), but that it does not characterize the rest of the deposit until the Koniag phase (Upper Level).

The Early Kachemak Type-site at Kachemak Bay

The Kachemak tradition was defined as a series of stages (or periods) at Yukon Island and Kachemak Bay on Outer Cook Inlet by de Laguna (1934). Later, it was amplified by closely related finds from Kodiak Island. To properly examine the early part of this tradition it is necessary to consider the original stages at Kachemak Bay. These are Yukon Island I and II, more broadly termed Kachemak I and II by de Laguna. These type components have better organic preservation than the Kodiak sites and thus provide supplemental information critical to describing the early culture. There is some question in my mind as to whether Kachemak I and II could be differentiated outside the original site of their excavation. The initial basis for periodization appears to have been the five breaks in the old or great midden at Yukon Island corresponding to three or four changes in cultural detail or elaboration: (1) Yukon Island I, (2) Yukon Island II and Fox Farm II, (3) sub-III, and (4) Yukon Island III and Fox Farm III which sometimes, with or without sub-III, is termed the third period. A poorly represented IV tentatively was distinguished as a separate very late entity (de Laguna 1934:29, 121 ff). For Kachemak I there is a radiocarbon date of 2706 BP (sometimes given as 2698 BP) that is somewhat equivocal because it was obtained early in the history of radiocarbon dating and was obtained on specimens that had been treated with a preservative (de Laguna 1962).

Her summary of culture history quoted below is brief (de Laguna 1934:129-131):

> We can briefly summarize the development of the Kachemak Bay culture by again referring to the following significant features. The stone industry of the earlier times is characterised by the greater relative importance of chipping [chert], including even the chipping of slate. The use of the stone saw is unknown. The notched stone is conspicuous by its absence [in Period I, common in Period II]; and of the grooved stones, only the type with groove about one end [plummet, Type 7] is found. Somewhat to our surprise, perhaps, we find realistic representation in stone already present in the First Period [stone head]. Later, polished slate grows in importance, and is applied to new types, while chipped stone becomes relatively less common. Perhaps we should associate the appearance of the felsite bar whetstone in Period sub-III with this development of polished slate. The stone saw is introduced in the same period. Notched stones suddenly appear in great numbers in the Second Period, with the large type at first predominating.... Grooved stones become more numerous and there are changes in type. [Next, an early primitive-appearing harpoon head is discussed, followed by discussion of traits that appear in Late Kachemak, including beads, various burial or mortuary practices, and near the end of the sequence, in what is now considered as post-Kachemak, the heavy splitting adze, copper and rare pottery].

> In many respects, the culture of the last two periods (sub-III and III) was richer than that of the first, even discounting the exaggerated impression of the variety of cultural types which depends in some measure upon the large number of specimens from the Third Period. The First Period culture is simpler.

De Laguna's last remark appears to be a key element in defining Early Kachemak, and in general terms her discussion sets out the distinction between Early and Late Kachemak.

There is considerable variation among these assemblages, whether due to differences in their age over the time span of nearly 1700 years, to differences in site location and function, to regional variation, or simply due to vagaries of sampling. I propose to group all of them, including the Old Kiavak phase, into an Early Kachemak regional phase. The steps in the developmental sequence are referred to as periods or stages by de Laguna. The term "stage" better reflects culture-historical reality but instead of running parallel systems of taxonomy, each with a different interpretive focus, I have limited myself to the simpler alternative. Temporal placement (early-late) obviously is an important criterion, but a certain arbitrariness has been used to set the boundary between Early and Late Kachemak. That may have to continue to be the case as there are no assurances a better archaeological record will provide more suitable markers for periodization. Finally, before taxonomy is set rigidly, the adequacy of a two-part division of the Kachemak tradition, compared to the possibility of using additional subdivisions (transitional, early, middle, late) should be examined.

Throughout this discussion, the Early Kachemak phase on Kodiak stands out for its simple lithic industry emphasizing relatively common or ubiquitous implements made from local material. The tendency to chip blades from slate noted at the Uyak site by Hrdlicka compares to the preparation of shingle uniface blades and slate fragment scrapers and ulu-shaped scrapers at Old Kiavak. One gets the same impression of simplicity of lithic industries from descriptions of the tradition as it existed in the outer Cook Inlet area (de Laguna 1934, Workman 1980). There seems to be relatively few diagnostic attributes or artifact types that characterize these early inhabitants of the Gulf of Alaska. Nevertheless, small sample size, loss of organic artifacts, and an excavator-unfriendly matrix combined give us a biased and inadequate representation.

The Inception of the Kachemak Tradition

The first people known to have occupied the northern North Pacific Coast, 10,000 years ago, are distinguished by blade and microblade technologies. Traces that old have yet to be recovered from Kodiak Island, but the first groups to occupy the island, perhaps more than 7000 years ago, can be counted among their descendants. These Ocean Bay tradition chert knappers subsequently developed a ground slate industry that formed the foundation for ground slate industries in the Pacific region of North America (Clark 1979, 1982). Ocean Bay sites have been found on Kodiak Island, the Pacific Coast of the Alaska Peninsula, the lower Kenai Peninsula and possibly Prince William Sound, the area later occupied by the Kachemak tradition.

Locally on Kodiak, ground slate implements nearly supplanted flaked chert tools, though on the northern and western part of the archipelago chert flaking continued alongside slate grinding as it did on the adjacent Alaska Peninsula (G. Clark 1977). The Alaska Peninsula case provides a perspective on Kodiak in which there is seen Ocean Bay-type continuity and change in the Takli Birch and succeeding Cottonwood phases though most of the forth millennium and third millennium BP. Takli Birch adopted some elements that characterize the Kachemak tradition, but neither it nor the succeeding Cottonwood phase exhibit technological changes away from Ocean Bay types as complete and as abrupt as found on Kodiak from the Ocean Bay to the Kachemak traditions. In a sense the Alaska Peninsula and Kodiak had separate trajectories, both initially derived from the Ocean Bay tradition. On Kodiak the chronological alignment of components divides Ocean Bay and Kachemak at about 3500 BP (3900 BP calibrated).

We come, thus, to the question: what is the developmental origin of the Kachemak tradition? Is Kachemak the Kodiak branch of the Ocean Bay tradition retooled and thoroughly restyled, or does it stem from another people with a different ethnicity? The reviews undertaken in these pages provide no basis for proposing that the Kachemak people immigrated to Kodiak and Outer Cook Inlet from other regions of Alaska. It is appropriate, then, to look for a local (Kodiak) based development. Nevertheless, Ocean Bay II and the Old Kiavak phase are sufficiently different technologically and stylistically that there are no specific hints of any relationship between them. There is, of course, a high degree of parallelism as would be expected for two peoples practicing similar lifeways in the same region. Considering the Early Kachemak components at Crag Point, possibly Monashka Bay, and the Uyak site, and Kachemak I on Outer Cook Inlet there again is little that indicates development out of the Ocean Bay tradition (Table 15).

Bridging this technological and stylistic gap requires a largely undocumented period between the abandonment of the Ocean Bay II sites and occupation at Old Kiavak, during which time there would have had to have been rapid change. Dating of the Old Kiavak deposit and late Ocean Bay, discussed earlier, allows only about five centuries for this to have taken place. But there is an additional site assemblage, strategically the earliest Early Kachemak component and dated within this temporal range, with transitional attributes. This is the Afognak River site AFG-088 discussed earlier. Scrutiny of the most recent dating Ocean Bay II assemblages also suggests that Ocean Bay may have been in transition towards Early Kachemak (Table 15 middle col.). The continuation of chert flaking in this and other northeasterly Kachemak tradition components suggests at least a generalized link with a facies of Ocean Bay II. In addition, among the slate points from the Afognak site there three examples, each a different style, that in each case would be at home in an Ocean Bay II slate assemblage. There also are a few Ocean Bay II-style sawn blanks from AFG-088. Some Afognak boulder spalls have smoothed edges which characterize Ocean Bay II spall saws, and the scraping technique of fabrication is seen on many AFG-088 slate specimens. Several links to the Ocean Bay tradition thus are present in this assemblage, in both the surface collection and importantly in test pit collections associated with Kachemak notched shingles (weights) and ulu knife blades. These data strongly suggest that the Kachemak tradition developed out of Ocean Bay II about 3800 or 3900 BP (calibrated C-14 years).

Implications

This *in situ* origin of the Kachemak tradition has many implications for further examination. Evidence of transition notwithstanding, it appears that changes from Ocean Bay to Early Kachemak occurred fairly rapidly, based on the few relevant sites excavated thus far, and this invites speculation on causes and effects. Many changes were more than stylistic or technology transfers. For example, there appears to have been changes in hunting and fishing implements and tools with the demise of long bayonet slate lance or spear points, employment of net weights in great numbers, adoption of the single edged slate knife or ulu, and an increase in adze bit frequency. Abundant fire-cracked rock suggests that the Earliest Kachemak people had taken up a form of steam bath. It can be noted, though, that changes in implements do not necessarily mirror changes in techniques: a short stone tip mounted in a shaft or long receiver can do the same job as a long stone point alone, there are ways to weight nets without employing notched pebbles, people can split and cut fish without ulus, and in not all archaeological cultures are adzes conspicuous though all people probably worked wood. But if there were changes in salmon fishing techniques, should we not expect concomitant changes in the organization of the fishery?

The advent of the Kachemak tradition may relate to the subsequent development of early Norton and Choris culture of the Bering Sea and Chukchi Sea region--cultures with Pacific ties in their harpoon dart heads, ground slate, stone lamps, and pebble net weights. With the finding that sawn and scraped slate persisted into the beginning of the Kachemak tradition, it becomes less implausible to link Choris-Norton scraped slate with early Pacific slateworking technology (Giddings 1963:151).

This finding also draws attention to our lack of understanding of the role of the Arctic Small Tool tradition on the Pacific Coast. ASTt artifacts appear sporadically in the very latest Ocean Bay deposits at the Rice Ridge site on Kodiak (unpublished data from P. Hausler-Knêcht), and there are hints of an ASTt component at the Sitkalidak Refuge Rock where a Koniag house at the 1784 contact site was excavated by R. Knecht (Knecht personal communication 1995). At Kachemak Bay there was ASTt settlement, probably of short duration, prior to the establishment of the Kachemak tradition (Workman and Zollars 1982). But there is no trace of any ASTt influence on the Early Kachemak communities of Kodiak and Kachemak Bay. Had ASTt adventurers arrived 4000 years ago to disappear from the region by Early Kachemak time? Did they have no effect on late Ocean Bay that would be carried over into the Kachemak tradition?

Links with other regions may be seen in some early Kachemak traits, for instance, in the broader distribution of labrets and toggle harpoon heads. It is barely known at what point in time these traits appeared in various areas; a fuller matrix of information is needed for both Early Kachemak and neighboring cultures. Comparisons can be made with the Aleutian region and Southeastern Alaska for the synchroneity of technology held in common, with concomitant implications of communication and relationships within the greater North Pacific region. Possibly we should have gone beyond Prince William Sound in our regional survey. There obviously was long-standing coastal communication, if not migration. The ground slate industry in Hidden Falls Component II, near Sitka, is specifically related to and possibly derived from the

Ocean Bay II slate industry (Davis 1988). Succeeding Component III, which falls within Kachemak tradition times, has an artifact inventory that could almost be duplicated in the Kachemak tradition, but the reverse does not hold inasmuch as Hidden Falls III lacks most of the items that give Kachemak its distinctive character, such as grooved cobble plummets, other grooved stones, stone lamps, and barbed ground slate points. At this time then communication towards the east (Northwest Coast) did not exist or ethnic differences were so strong that there was little interchange of technology.

If, as appears to be the case, the Kachemak tradition developed out of Ocean Bay, there probably was concomitant linguistic and ethnic continuity. Most archaeologists consider Kachemak culture and people to have been Eskimoan, in the sense that Aleuts are Eskimoan, and some see them as a branch of Eskimo in the strict sense. It follows that Early Kachemak people and their Ocean Bay antecedents may have been ancestral Esk-Aleuts (Clark 1992a, 1992b; Dumond 1987a, 1987b; Jordan and Knecht 1988), and even ancestral Eskimos. But being ancestral Eskimo does not necessarily mean being the ancestor of all Eskimos, nor does it mean that the historic speakers of the dialect of Yupiq found on Kodiak and the adjacent mainland have had an uncomplicated history that can be traced back *in situ* to 7000 years ago, or earlier. The sensitivity of the analytic approaches of archaeology to register ethnicity and changes in ethnicity and language is not fine enough to allow us to make that assertion. It may be pertinent, though, that aside from minor extensions and contractions the distribution of Ocean Bay, Kachemak and Pacific Eskimo cultures has had the same boundary for at least six millennia.

Figure 26. Site AFG-088, down-river (left) and up-river portions, lacking a short interval in the middle.

TABLE 15. CONTRASTIVE ELEMENTS OF OCEAN BAY II AND EARLY KACHEMAK

Basic Ocean Bay II	Transitional	Basic Early Kachemak
Sawn slate strip blanks	Present at AFG-088	Absent
Scraping of slate	Present at AFG-088	Absent
Absent	Probable fragments found found late in OB II	Slate ulu blades
Absent	Rare or absent in earliest Early Kachemak	Drilling of slate (for hafting)
Rare	Nevertheless single groove variety present	Grooved cobbles, several varieties
Absent		Grooved plummet
Nearly absent	A few late in OB II	Abundant notched stones
Absent	Rare or absent in Earliest Early Kachemak	Labrets
Absent		Toggle harpoon heads
Single style of harpoon head differs from Kachemak		Several styles harpoon, differ from Ocean Bay II
Absent		Arrow heads have lines outlining row(s) of barbs
Absent		Holes in harpoon heads (for line attachment)
Absent		Harpoon dart sockets
Very long slate spear heads		Absent
Edge barblets and cut-line face decorations on slate spear points	An AFG-088 point has serrated edge, stem serration carries through OB-Kachemak	Absent (variant appears in Late Kachemak)
Distinctive flaked chert points	Points may become generalized late in OB II	Generalized chert points
Adze bits, ground on one face only, mostly flaked		Bits ground on both faces, and sometimes on whole surface
Broad stemmed slate knives		Double-edged knives are narrower and smaller
Slit eyes in needles		Late Kachemak eyes are round
Very large ochre grinders	Handstone at AFG-088	Absent?
Red ochre coated floors		Absent
Absent		Clay-lined features
Sea otter bones common		Rare (not eaten)

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PLATE 1. HISTORIC AND KONIAG PHASE ARTIFACTS

a	uncat	High calibre, heavy grain bullet slug
b	uncat	30-30 WCCo cartridge case
c	A4-1.9	45-90 WRACo WCF cartridge case
d	B6-1.4	40-82 WRACo WCF cartridge case
e	A4-1.8	Winchester No 10 shotgun shell case
f	A5-2	Labret? (atypical)
g	uncat	Cast-iron skillet (handle only)
h	A4-1a	Harpoon head, brass
i	D2-2a.11	Grooved tooth (walrus?)
j	uncat	Information panel from a boot
k	uncat	Iron razor or fire steel
l	A4-1.1	Brass top or lid
m	uncat	Boot heel, iron
n	D1-2.4	Fragment of spoon made from platy bone, probably Koniag

"H" is 13 cm long.

PLATE 1. HISTORIC AND KONIAG PHASE ARTIFACTS

PLATE 2. VARIOUS LARGE IMPLEMENTS

a	A4-1.7	Large slate adze, attributed to Koniag phase
b	A8-3.3	Adze-shaped graywacke shatter with polish on flat surface and retouch and trace of polish at narrow end
c	D1-1.1	Wedge, attributed to Koniag phase
d	A7-3.28	Large flat pebble, notched at ends, Old Kiavak phase
e	A7-1.19	Small flat cobble, notched at ends and (slightly) one side
f	A5-1.1	Ulu, attributed to Koniag phase
g	A4-2+A3-2	Large ceramic sherd, Koniag phase
h	A4-3.12	Maul with indentation on two opposed sides

The size of artifacts is given in the text. "A" is 18 cm long.

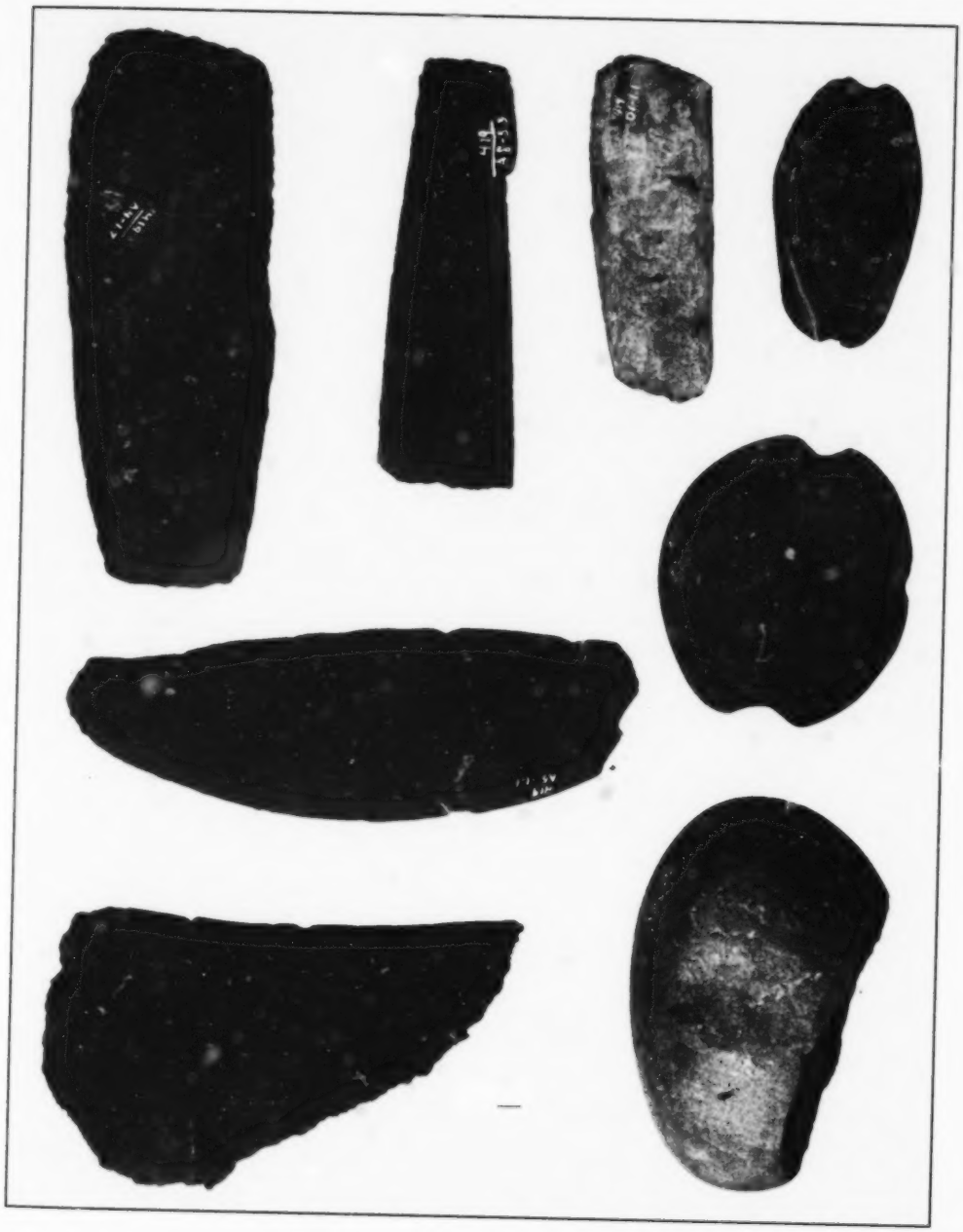


PLATE 2. VARIOUS LARGE IMPLEMENTS

PLATE 3. HARPOON HEADS AND OTHER OBJECTS

a	A4-8	Foreshaft for toggle harpoon head
b	A---	Harpoon dart head
c	A4-5	Harpoon dart head
d	A---	Harpoon dart head fragment
e	A---	Toggle harpoon head, unfinished
f	A6-2	Adze haft
g	A6-6	Single shoulder foreshaft or dart head fragment, cut off
h	A4-8.7	Awl format tool with chisel-type end
i	A4-4b	Birdbone awl
j	A5-7	Fish hook shank, provenience below midden band
k	A4-4b.4	"Clam digger" or "root digger" tip
l	A7-3.12	Ground slate splinter, small end ground flat
m	A13-2.16	Slate rod, pointed end blunt, other end broken
n	A6-2.1	Slate rod fragment, narrow end broken, widen end battered
o	A4-1b.1	Slate rod, complete, ground on two sides, intact ends blunt

"E" is 5.7 cm long; "O" is 10 cm long.

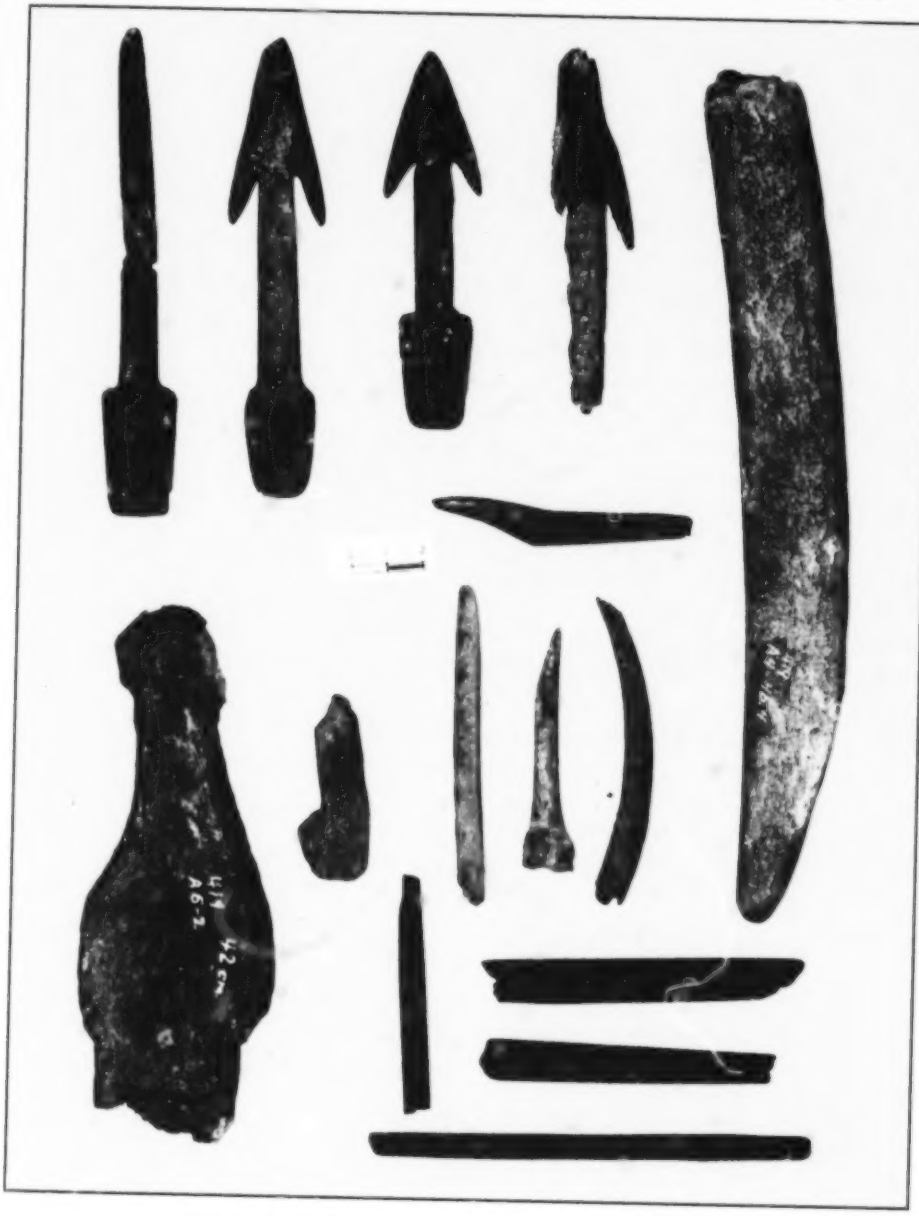


PLATE 3. HARPOON HEADS AND OTHER OBJECTS

PLATE 4. GROUND SLATE PROJECTILE TIPS

a	B5-2	Three Saints barb style
b	A6-4	Three Saints barb style, ground to chisel-like edge at end
c	AX-2.4	Three Saints barb style, oblique edge (old break?) ground but not sharp
d	AX	Rough Three Saints style barbs
e	A2-6.2	Three Saints barb style, from relatively deep level
f	A5-3.11	Three Saints barb style, atypically flat
g	A12-1	Very well prepared shouldered stem, comparable with Three Saints style
h	A7-4.2	Stemmed projectile tip
i	A4-3.6	Tip with poorly prepared stem and barbs
j	A12-3.2+.3	Tip fragment of atypically narrow format
k	A7-2.35	Base fragment in the Three Saints barb style
l	A10-3.2	Small knife blade with serrated stem
m	B6-3.1	Probable lance blade midsection with decoration or identification marks
n	A4-6	Point base (missing butt end) and midsection, atypically narrow
o	A5-4	Stemmed point (from Old Kiavak phase levels though style is Koniag)
p	A3-1	Unfinished endblade or lancet (all edges are blunt)
q	B5-1.6	Point base, Pacific Eskimo style with hollow ground faces

"N" is 7.5 cm long.

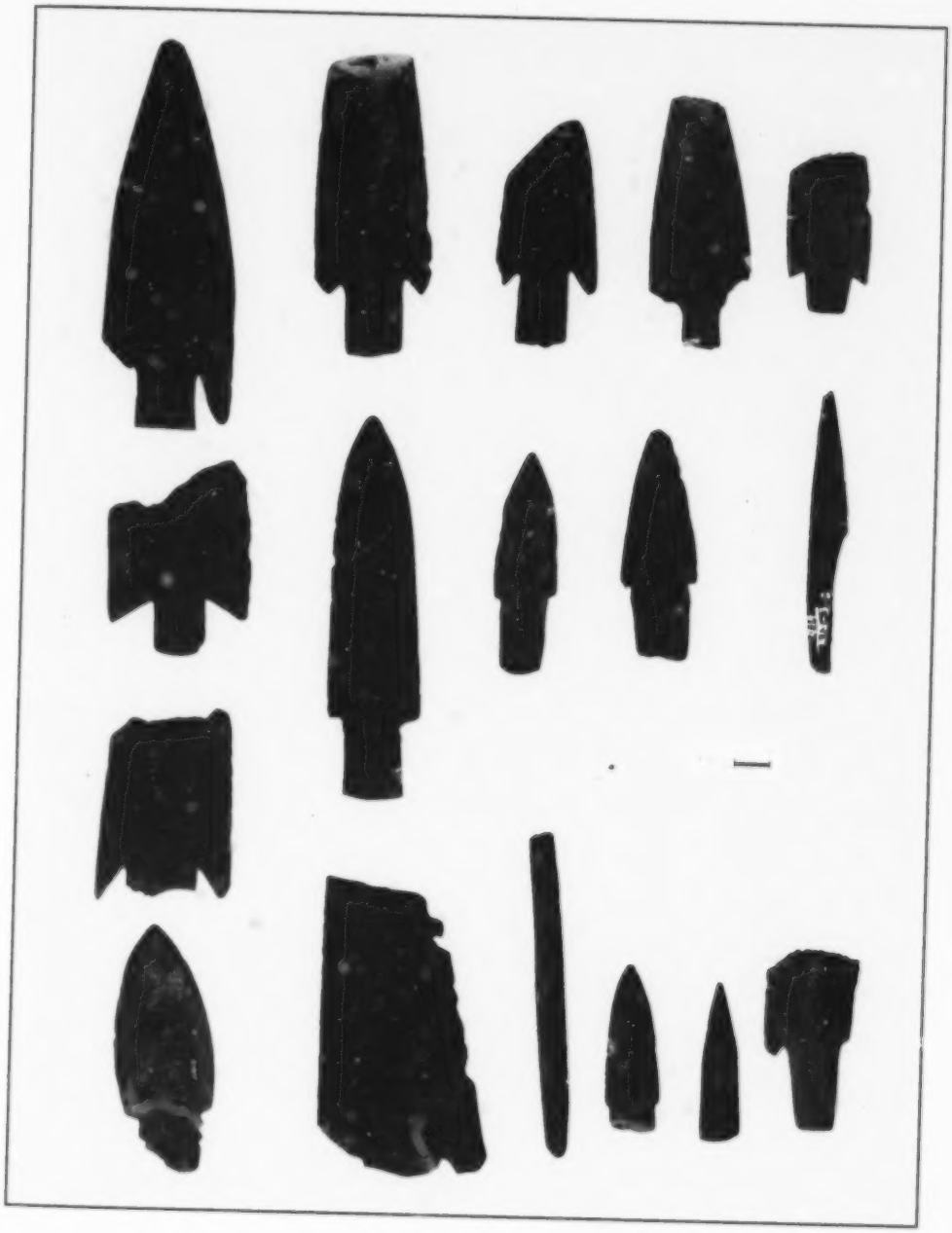


PLATE 4. GROUND SLATE PROJECTILE TIPS

PLATE 4A. DETAIL OF SELECTED GROUND SLATE PROJECTILE TIPS

a See Plate 4 k
b See Plate 4 e
c See Plate 4 l
d See Plate 4 b
e See Plate 4 a
f See Plate 4 g
g See Plate 4 d
h See Plate 4 h
i See Plate 4 f
j See Plate 4 c
k See Plate 4 n
l See Plate 4 i

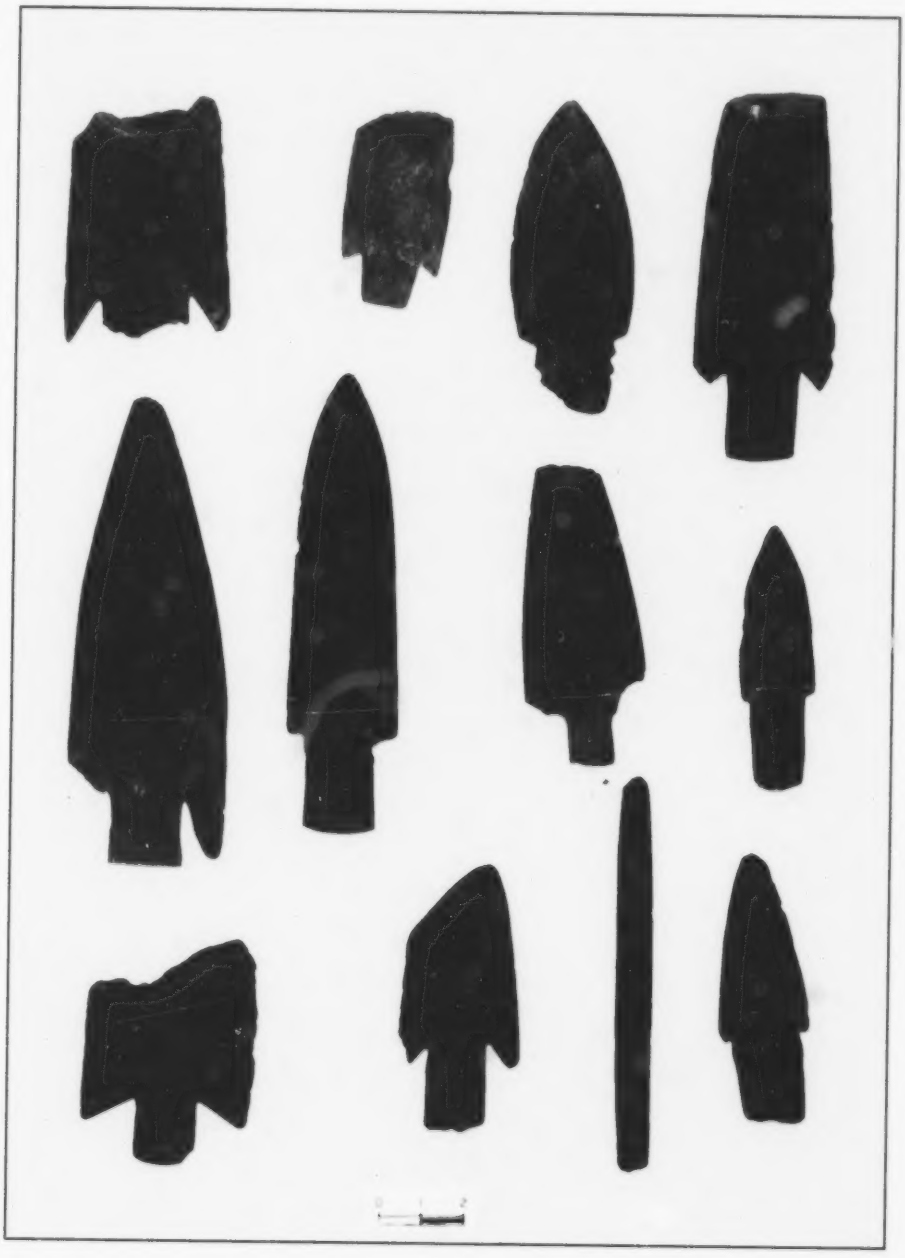
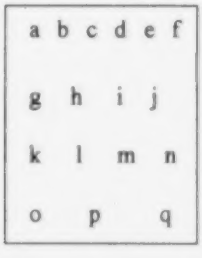


PLATE 4A. DETAIL OF SELECTED GROUND SLATE PROJECTILE TIPS

PLATE 5. FLAKED CHERT AND GREENSTONE IMPLEMENTS

a	XA	Retouched blade, knife?
b	X (spoil)	Bifaced point, stem incomplete
c	A9Hearth 3	Stemmed bifaced point
d	B5-6	Bifaced point
e	B5-6.2	Unidentified thick lenticular object
f	B4-4a.11	Red chert biface, fragment
g	B6-6.7	Very rough stemmed greenstone biface
h	B5-2.19	Object in the format of an end scraper (unfinished adze?)
i	A2-6.4	Broad, pointed biface fragment
j	AX	Adze, damaged, ground on ventral side
k	D1-4.1	Biface, rough and unfinished
l	A5-5.6	Small adze or chisel bit
m	B6-6.3	Prismatic blade
n	A4-4a.18	Implement fragment
o	A7-3.23	Retouched flake, functionally probably a knife
p	B6-1.3	Tabular object retouched along top edge (unfinished adze?)
q	B4-3'4.2	(wall provenience) Flake core

The size of artifacts is given in the text. "B" is 6 cm long.



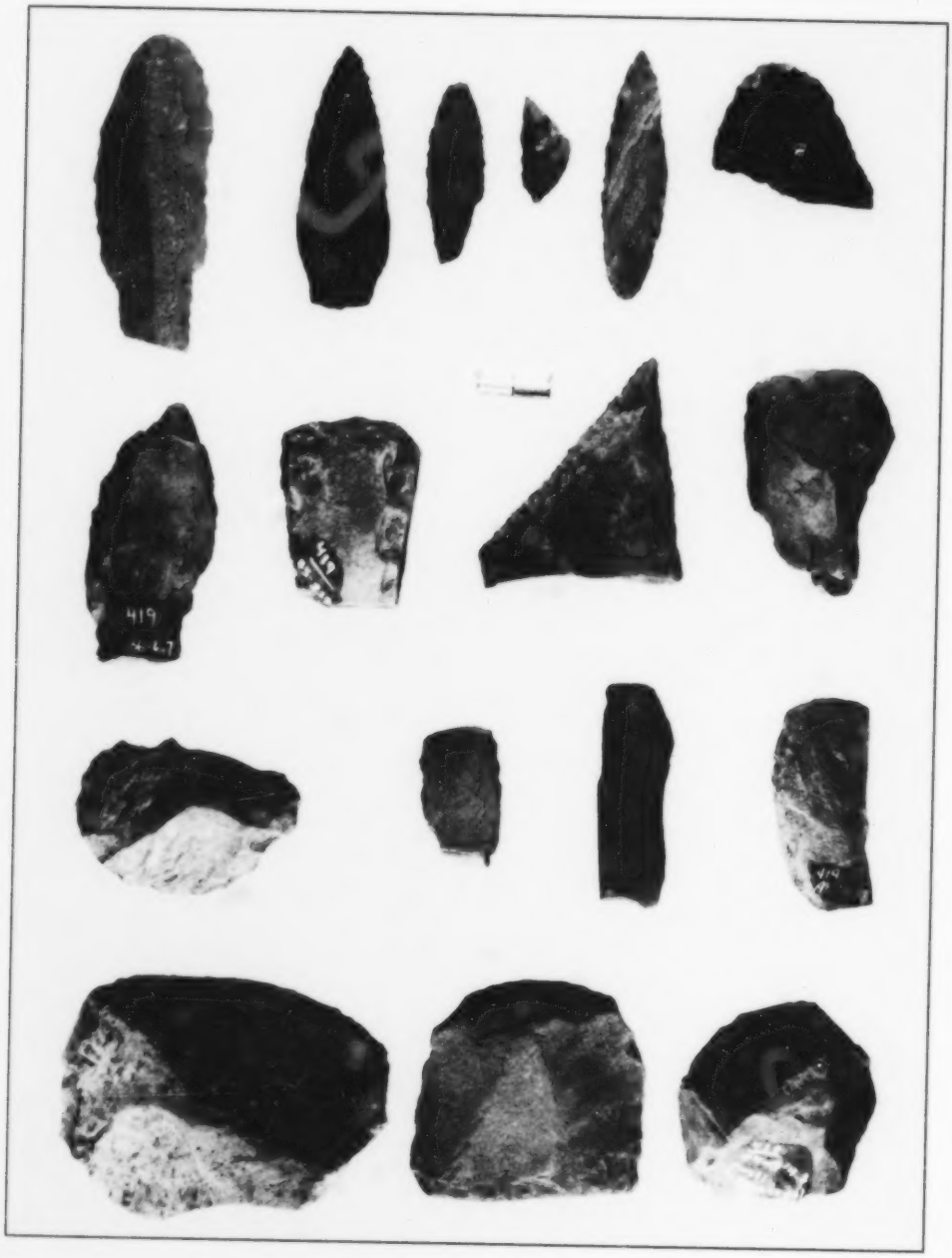
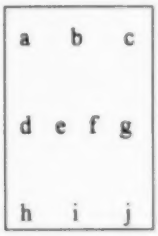


PLATE 5. FLAKED CHERT AND GREENSTONE IMPLEMENTS

PLATE 6. FLAKED IMPLEMENTS, DETAIL

a	A9Hearth 3	Stemmed biface point
b	B5-6.2	Unidentified thick lenticular object
c	B4-3'	Flake core
d	XA	Retouched blade, knife? Shore find.
e	X(spoil)	Bifaced point, stem incomplete
f	B5-6	Bifaced point
g	A5-5.6	Small adze or chisel blade, ground bit
h	A2-6.4	Broad, pointed biface fragment
i	B6-6.3	Prismatic blade
j	A7-3.23	Large retouched flake, knife?



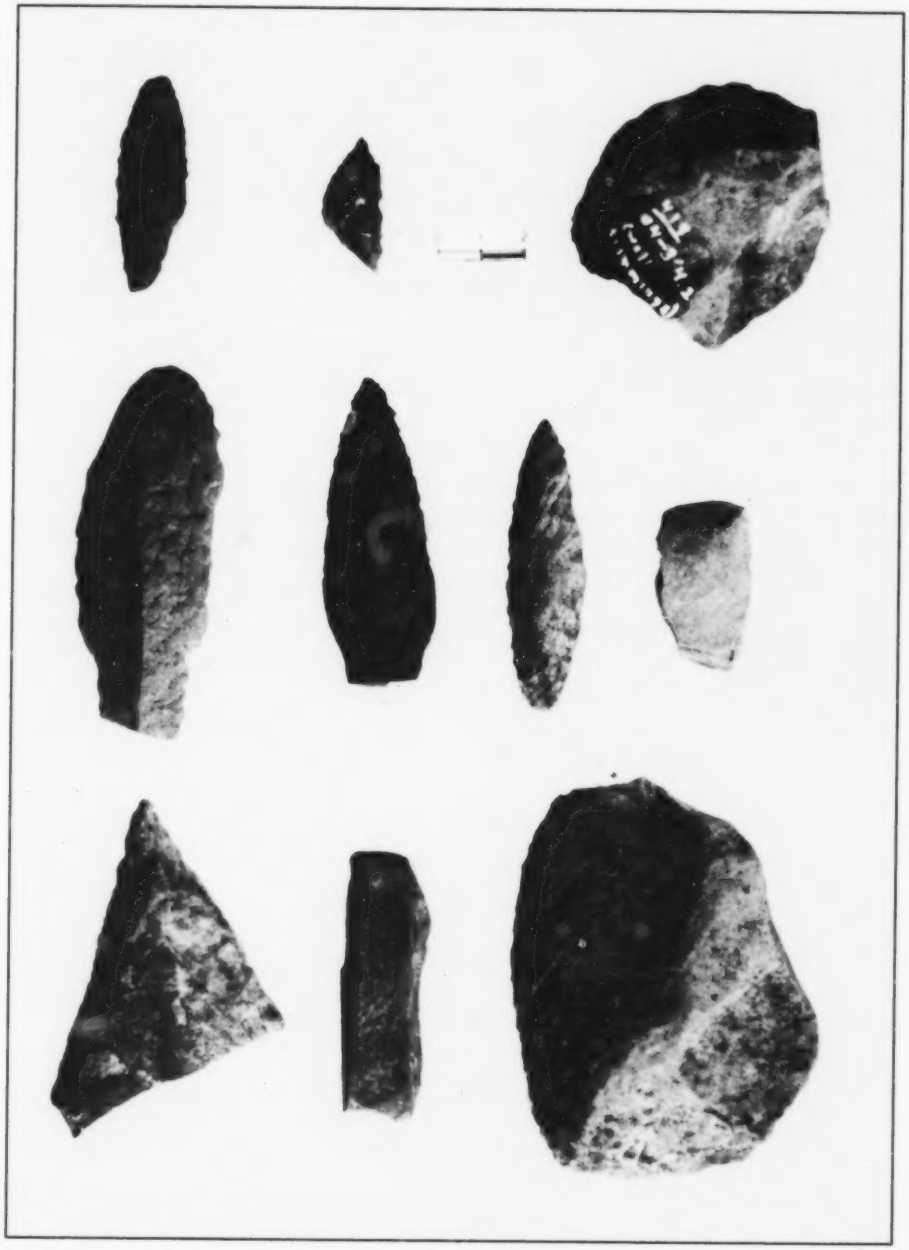


PLATE 6. FLAKED IMPLEMENTS, DETAIL

PLATE 7. GROOVED COBBLES

a	A10-4.1	End grooves, discontinuous, Type 2a
b	A4-5.5	End grooves, discontinuous, Type 2b
c	A8-1.4	Long diameter groove, continuous, Type 2
d	B5-2.24	Short diameter groove, continuous, Type 3
e	B1-6	Edge groove, continuous, Type 6
f	B5-3.1	Double-ended plummet, ends broken, Type 7 variant
g	BM6-50cm	Plummet fragment (recovered from trench wall), Type 7
h	B2-3.9	End grooves, discontinuous, Type 2a or b
i	A3-1.6	Side grooves, discontinuous, Type 3a
j	B2-5.2	Plummet with incomplete groove, Type 7
k	A4-3.13	Plummet, knob damaged but mostly present, Type 7
l	B4-5.1	Plummet, most of knob removed through ambitious grooving
m	D1-3.12	Plummet, sculptured variety, fragment, Type 7a

These objects range from 4.5 cm to 11.5 cm length.

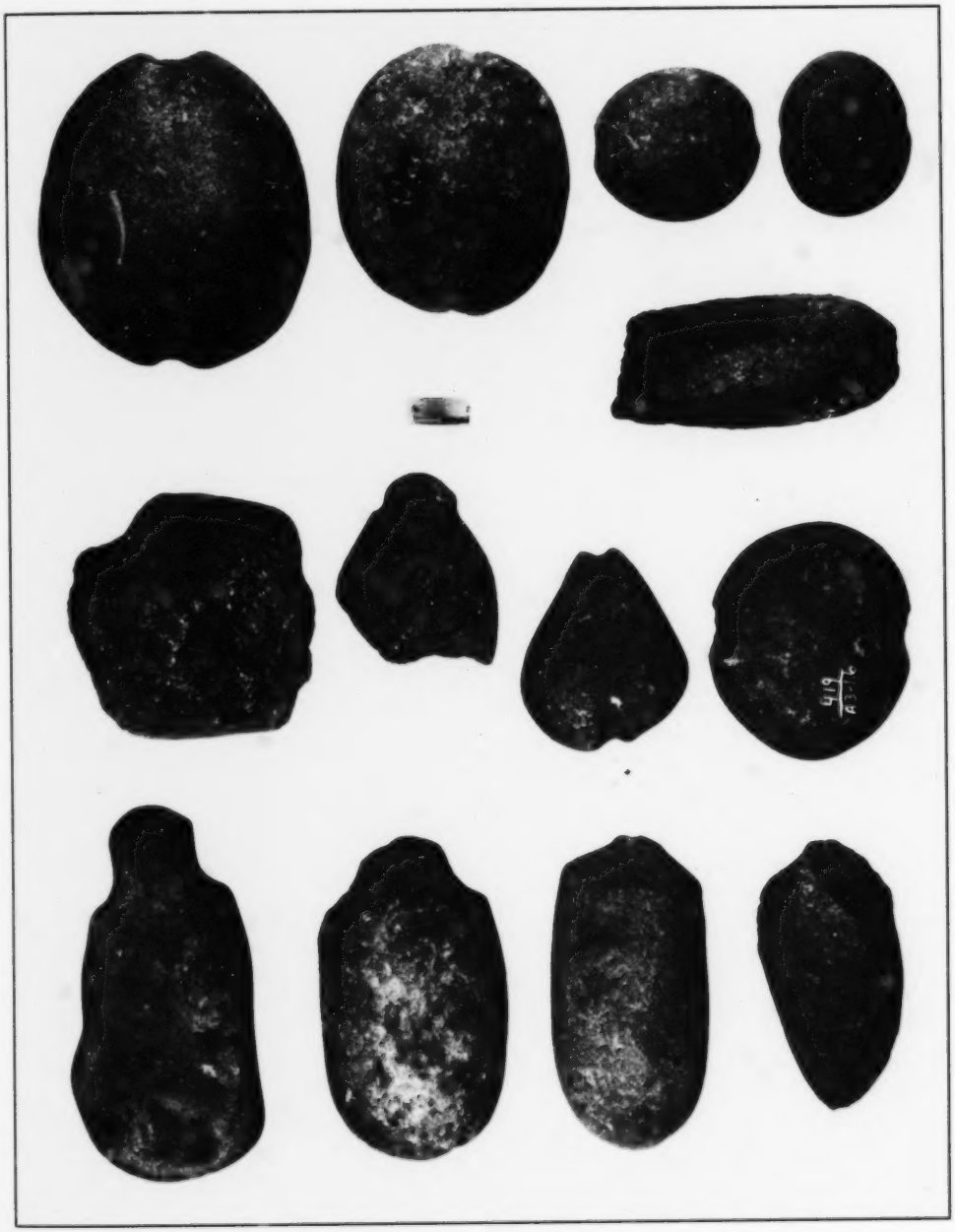


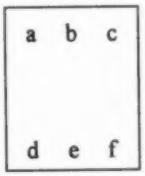
PLATE 7. GROOVED COBBLES

PLATE 8. ADZE BITS

a	A5-3.13	d	D2-3.2
b	A2-7.8	e	D2-1.4 fragment, Koniag?
c	A7-3.13	f	A3-4

(see Plate 5 for additional specimens)

"D" is 10.6 cm long.



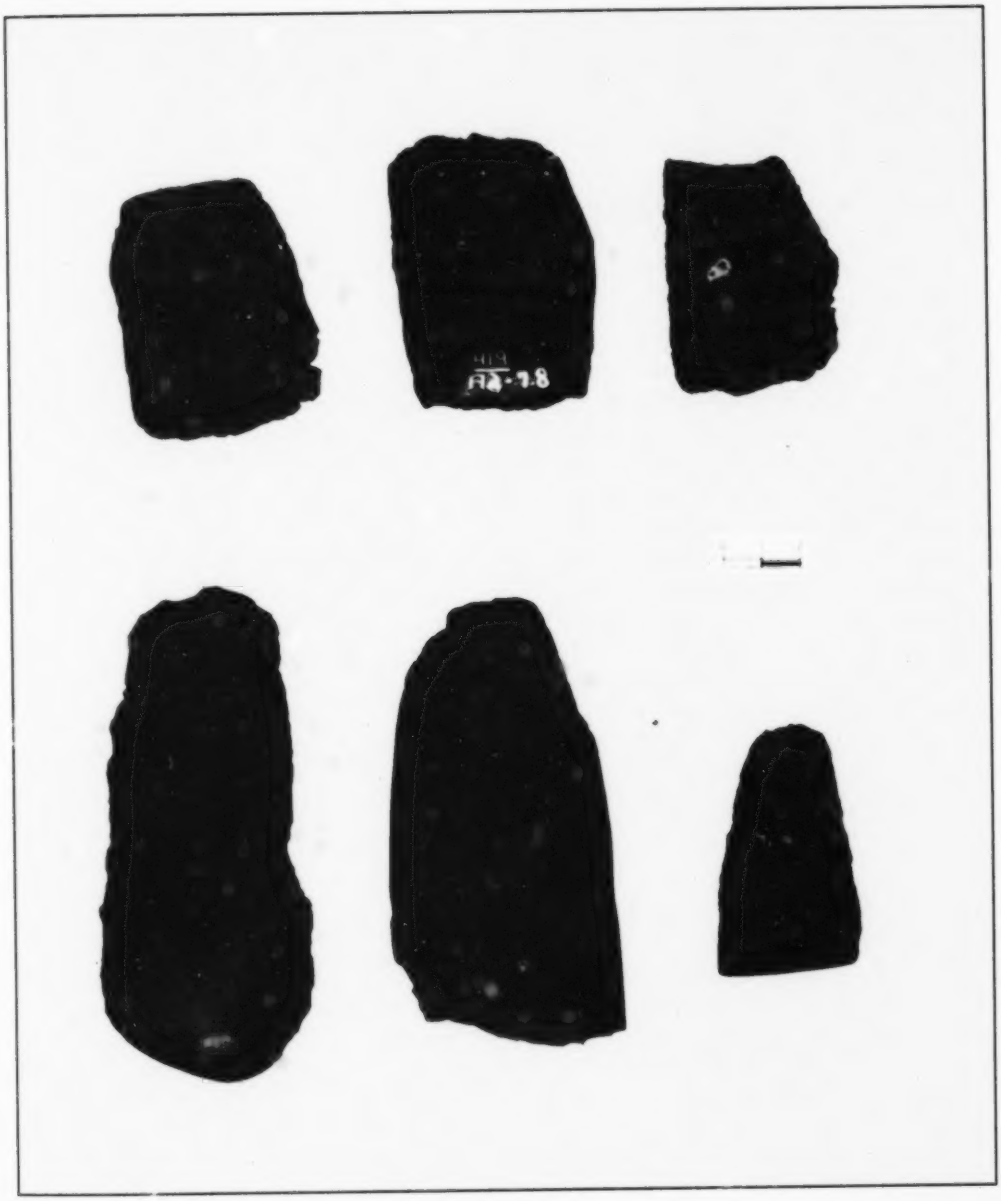


PLATE 8. ADZE BITS

PLATE 9. KNIVES AND LANCE BLADES OF GROUND SLATE

a	A12-3	Double-edged slate blade
b	A9-3.1	Tip of broad double-edged blade
c	B4-4a-4	Tip of broad double-edged blade
d	A4-3.3	Blade with serrated stem
e	A3-8.1	Blade with serrated stem, fragment, deep provenience
f	B4-2.8	Bluntly-edged blade, missing base
g	B1-2.1	Blade with serrated stem, missing tip
h	A3-4.1	Blade with serrated stem, tip damaged
i	A2-7.4	Blade with serrated stem, tip missing, deep provenience
j	A4-4a.26	Base of blade with serrated stem
k	B6-1.2	Base of blade with shouldered stem
l	A11-2.1	Midsection of straight-sided blade
m	A2-1	Blade with rounded tip
n	A8-1.3	Weakly-serrated stem fragment
o	B4-2.13	Deeply serrated stem fragment
p	A5-8.1	Ulu blade, basal provenience

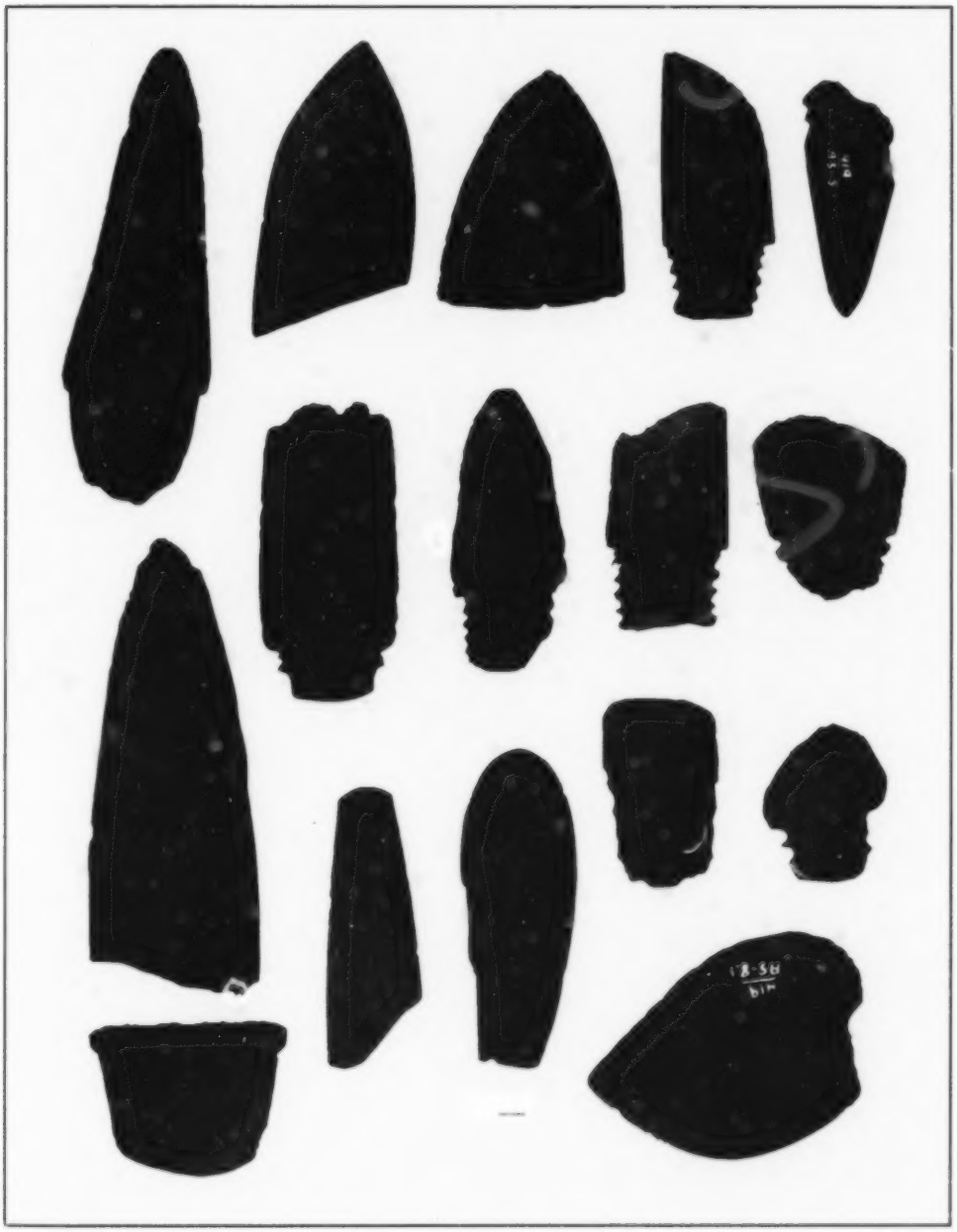


PLATE 9. KNIVES AND LANCE BLADES OF GROUND SLATE

Plate 10. KNIVES AND LANCE BLADES OF GROUND SLATE (from Plate 9)

a	A12-3	See Plate 9 a
b	A4-3.3	See Plate 9 d
c	A3-4.1	See Plate 9 h
d	A4-4a.26	See Plate 9 j
e	A2-1	See Plate 9 m
f	A2-7.4	See Plate 9 i
g	B4-2.13	See Plate 9 o
h	A3-8.1	See Plate 9 e
i	B2-2.1	See Plate 9 g

PLATE 10. KNIVES AND LANCE BLADES OF GROUND SLATE

PLATE 11. ULU BLADES

a A11-2.2
b A3-6.4
c B4-4a.6
d A9-4.8
e A7-1.7 (side edges flat, lower edge ground or worn blunt, holes Kachemak style)
f AX (bottom edge and right end sharp)
g A4-4.7
h A3-6.1
i A11-2.5
j A9-2.1
k A11-1.8 (Drilled hole is Kachemak style)
l A2-4.1 (edges damaged or not sharpened, hole Kachemak style)
m A9-1.11 (Kachemak style hole)

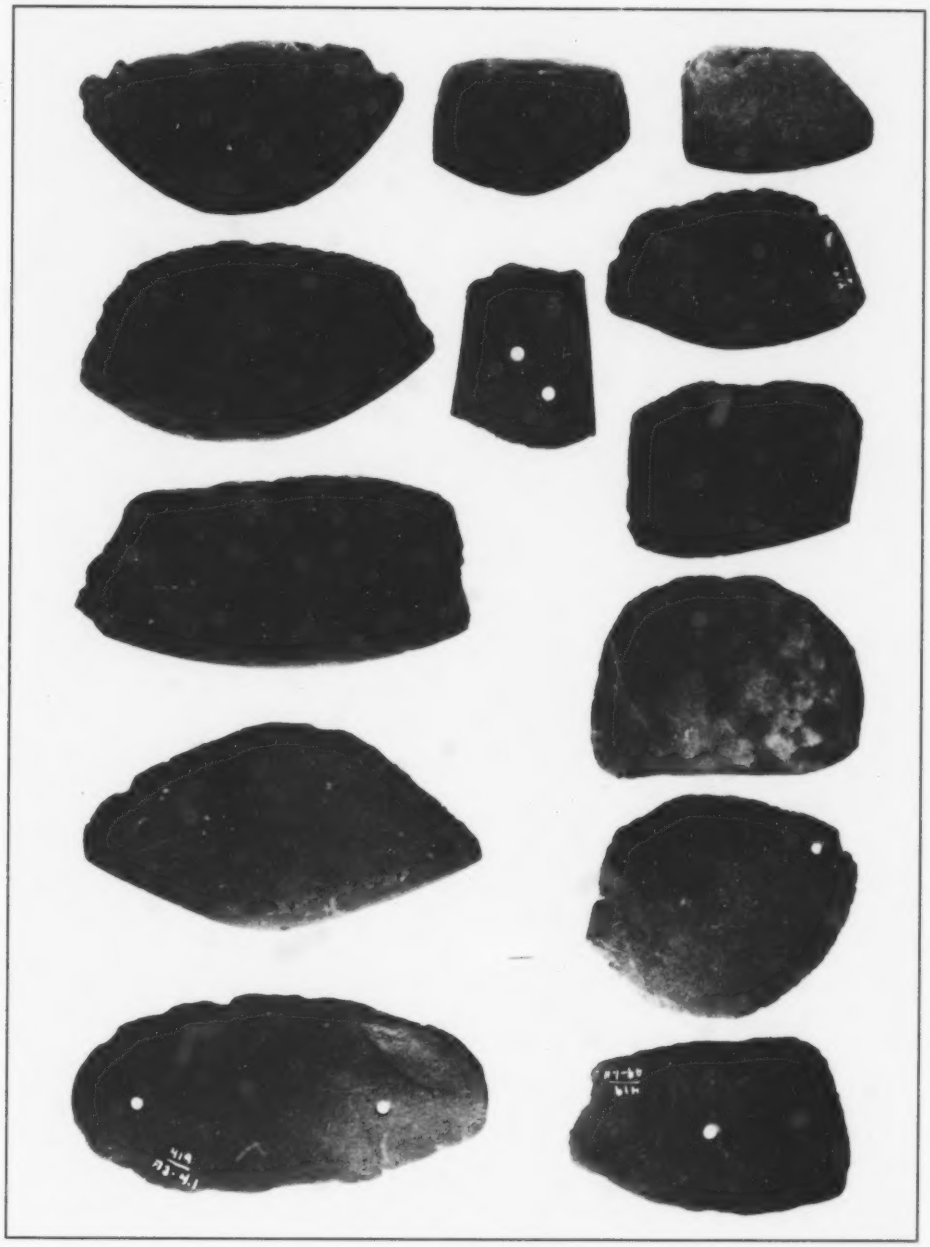


PLATE 11. ULU BLADES

PLATE 12. VARIOUS IMPLEMENTS

a	A2-1.4	Cobble spall	g	A11-1.9	Abrader
b	A4-2.20	Pumice abrader	h	A4-5.6	Abrader
c	B5-4	Scoria abrader	i	A4-3.2	Wedge
d	AX	Cobble spall	j	A6-3.1	Abrader
e	D2-2.12	Hammerstone	k	A5-1.5	Wedgeshaped tool
f	A7-1.18	Pebble abrader (broken)	l	A3-5.1	Wedge

"B" is 5 cm long; "I" is 7.5 cm long.

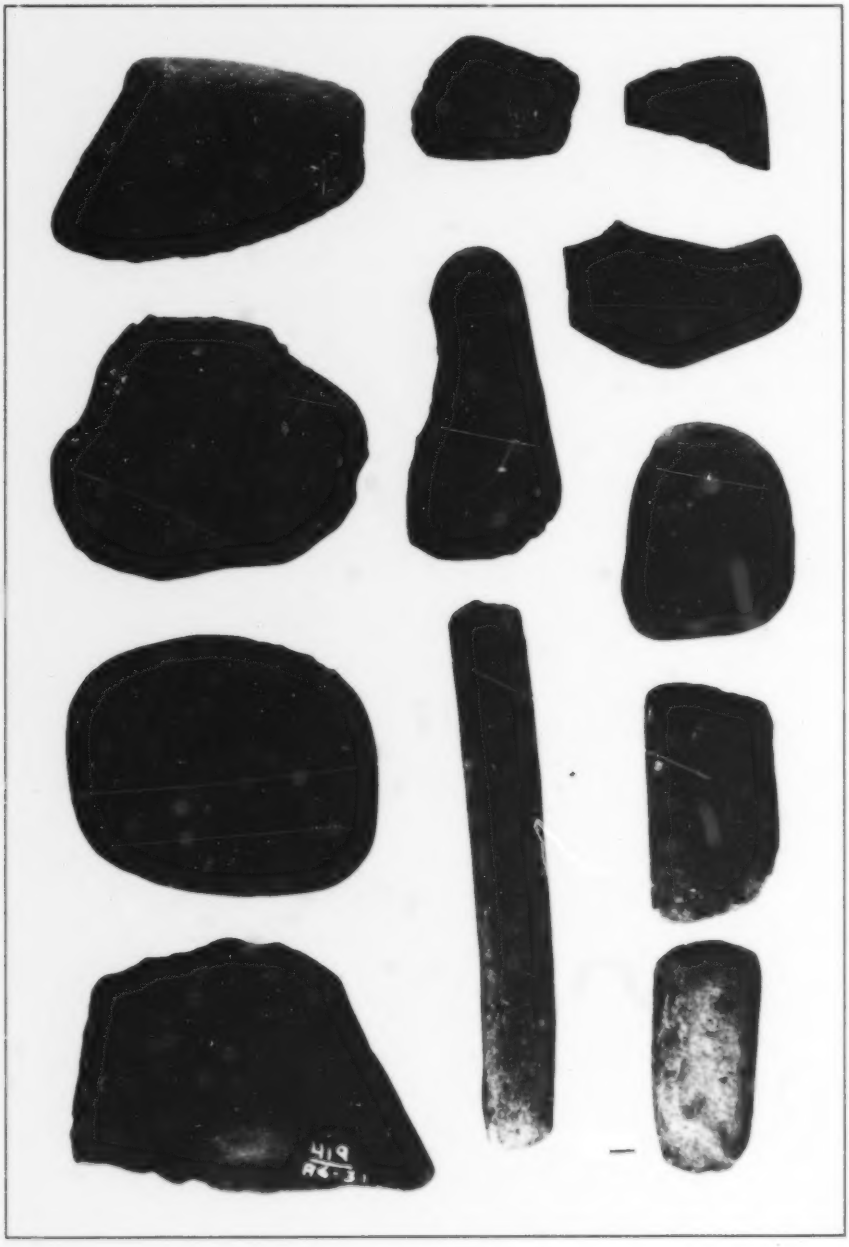
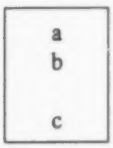


PLATE 12. VARIOUS IMPLEMENTS

PLATE 13. LARGE BLADES

a	A4-9	Notched angular graywacke, slightly battered along top edge From below the nominal base of the site.
b	A3-3.1	Large flaked slate ulu-shaped blade.
c	B1-1.1	Large flaked slate ulu-shaped blade.

"C" is 23 cm long.



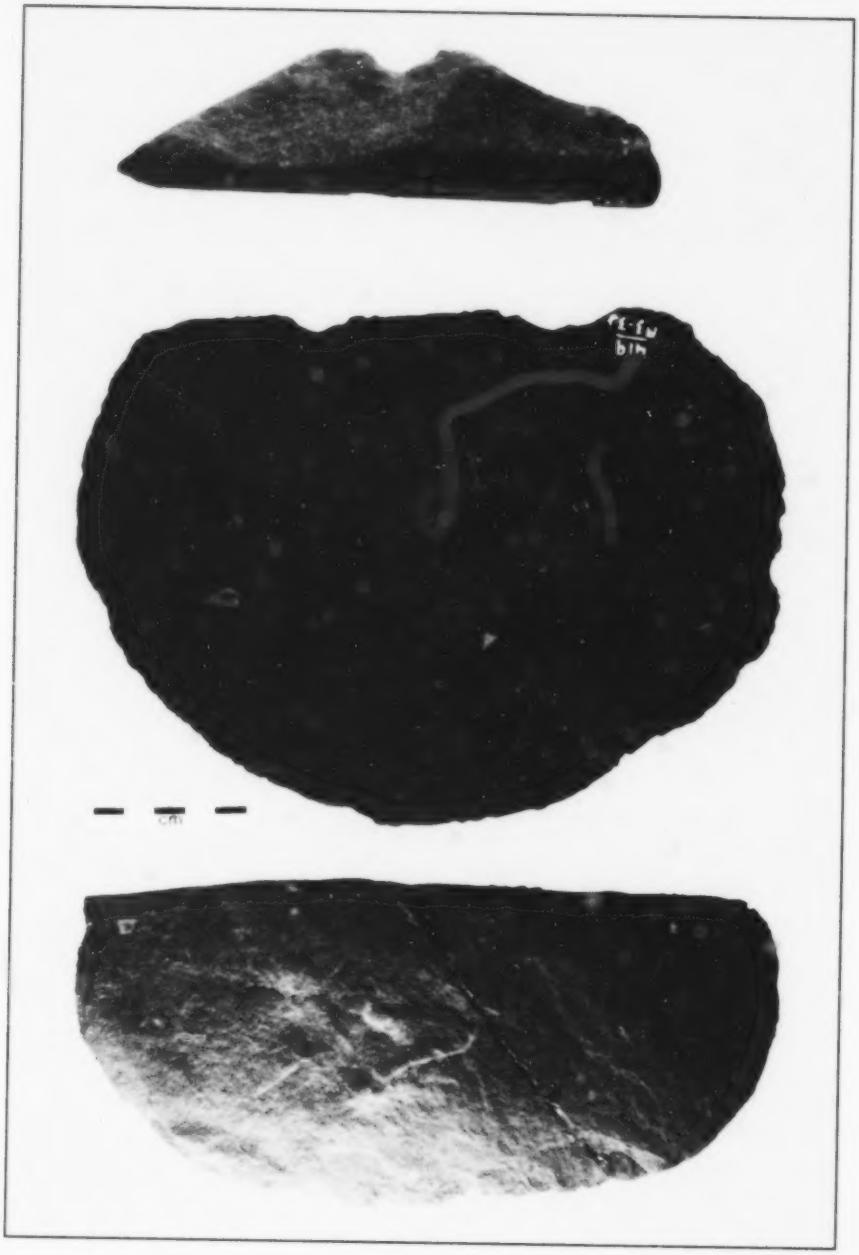
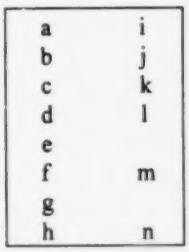


PLATE 13. LARGE BLADES

PLATE 14. TRIMMED BEACH SHINGLES AND FLAKED SLATE BLADES

a	x	h	x
b	x	i	x
c	x	j	A4-4a.11 Flaked blade
d	B1-2	k	x Flaked blade
e	B4-2.1	l	A9-2b.1Flaked blade
f	B5-4.8	m	B5-3.22Flaked blade
g	B1-5.2	n	B4-4a.12 Flaked blade

"J-N" range from 9.3 to 17 cm length.



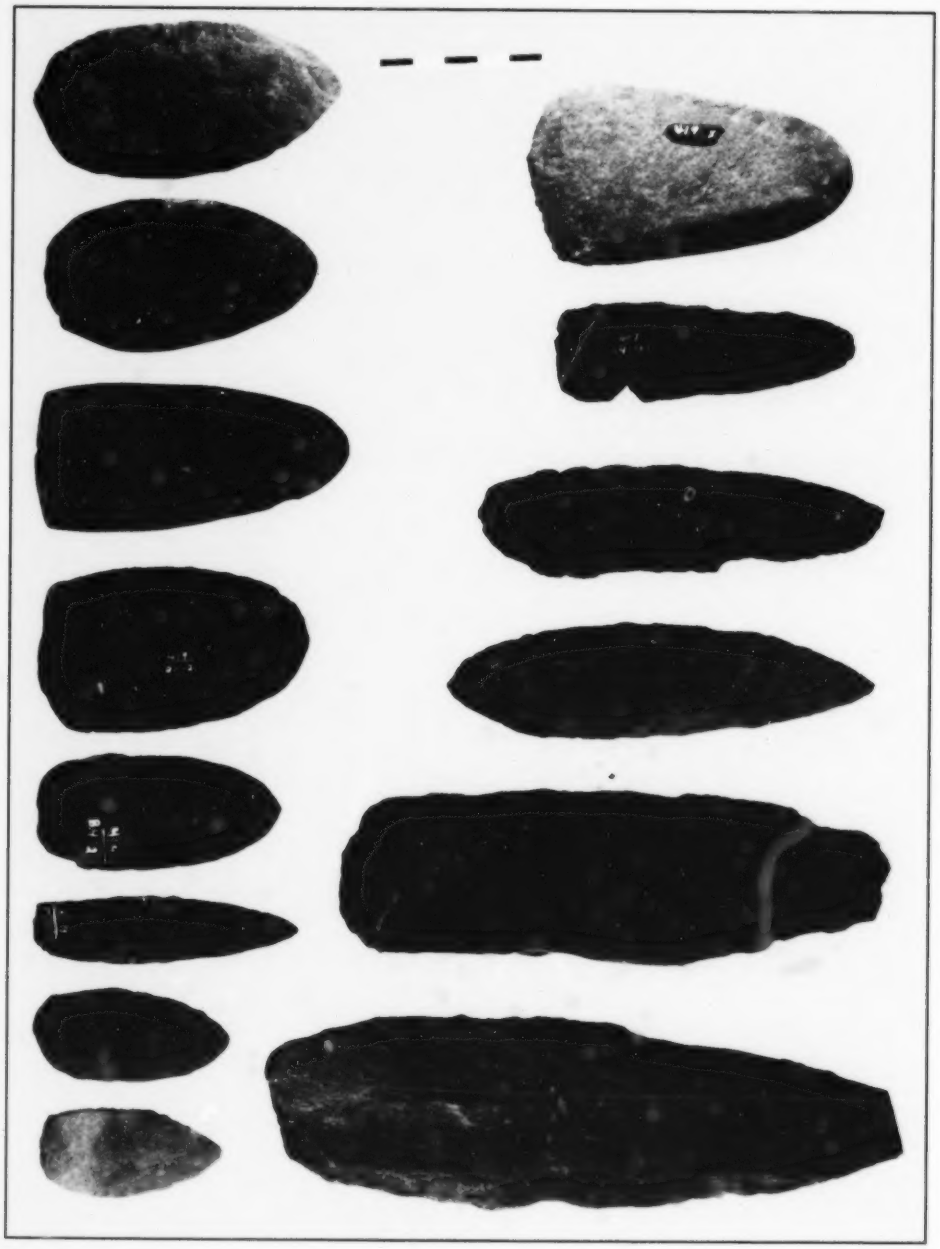


PLATE 14. TRIMMED BEACH SHINGLES

PLATE 15. TRIMMED BEACH SHINGLES AND FLAT FLAKED SLATE BLADES

a	Reverse of Plate 14 a	h	Reverse of Plate 14 h
b	Reverse of Plate 14 b	i	B2-5.1 Flaked slate blade
c	Reverse of Plate 14 c	j	A5-3.13 Flaked slate blade
d	Reverse of Plate 14 d	k	A3-3.1 Flaked slate blade
e	Reverse of Plate 14 e	l	B5-2.20 Flaked slate blade
f	Reverse of Plate 14 f	m	A7-3.1 Ulu-shaped
g	Reverse of Plate 14 g		flaked slate blade

The lettering sequence of this plate has been set to parallel Plate 14.

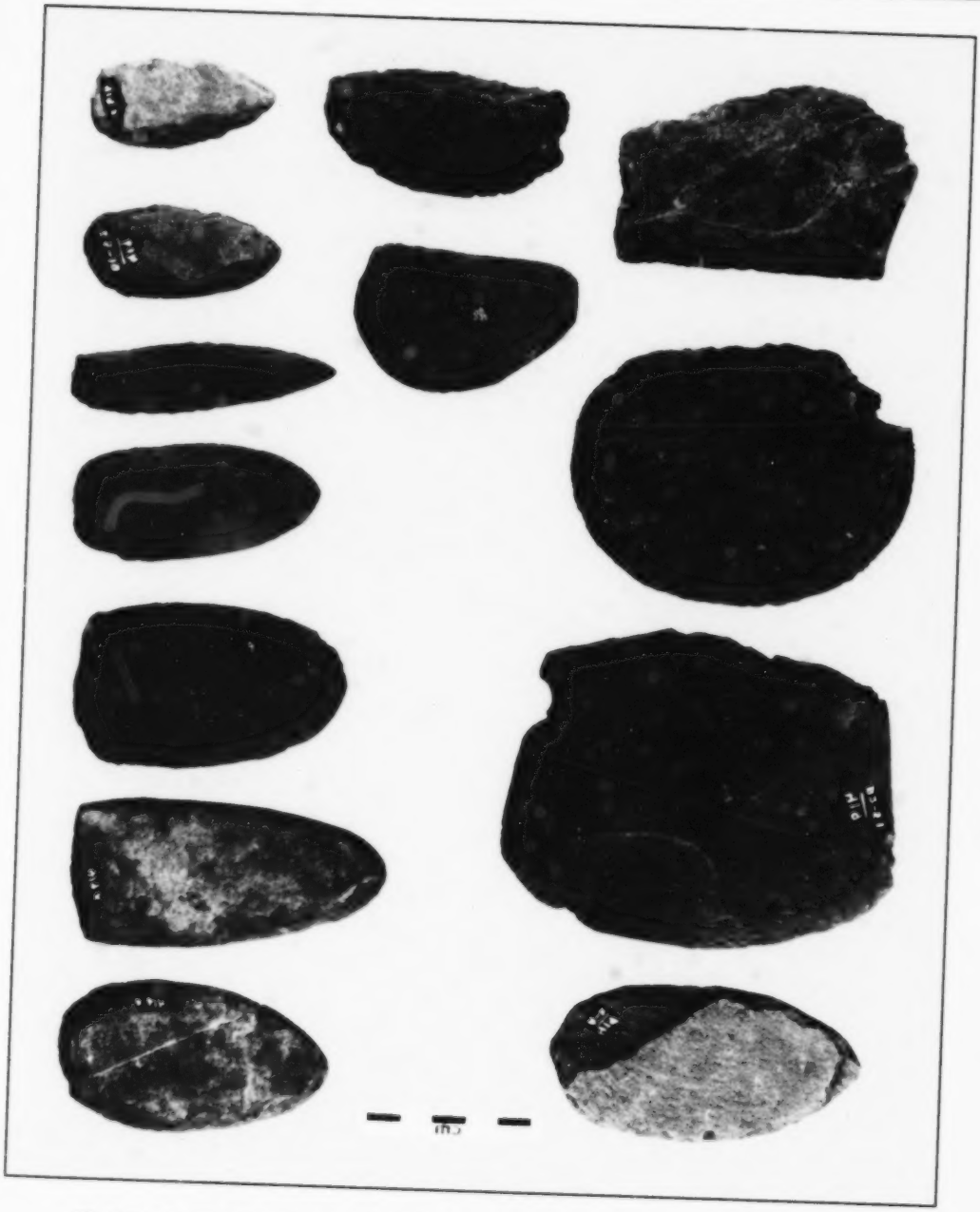


PLATE 15. TRIMMED BEACH SHINGLES AND FLAT FLAKED SLATE BLADES

PLATE 16. BOULDER FLAKES

All through their retouch are assigned to the Old Kiavak phase.

a	A2-6.1 adze	f	B4-3.1
b	D2-2.1	g	A7-1.16
c	A7-2.??	h	D1-3.1
d	B5-4.3	i	B5-3.2
e	A7-1.28	j	B6-7.1, deep provenience

The largest objects are 15 cm long.

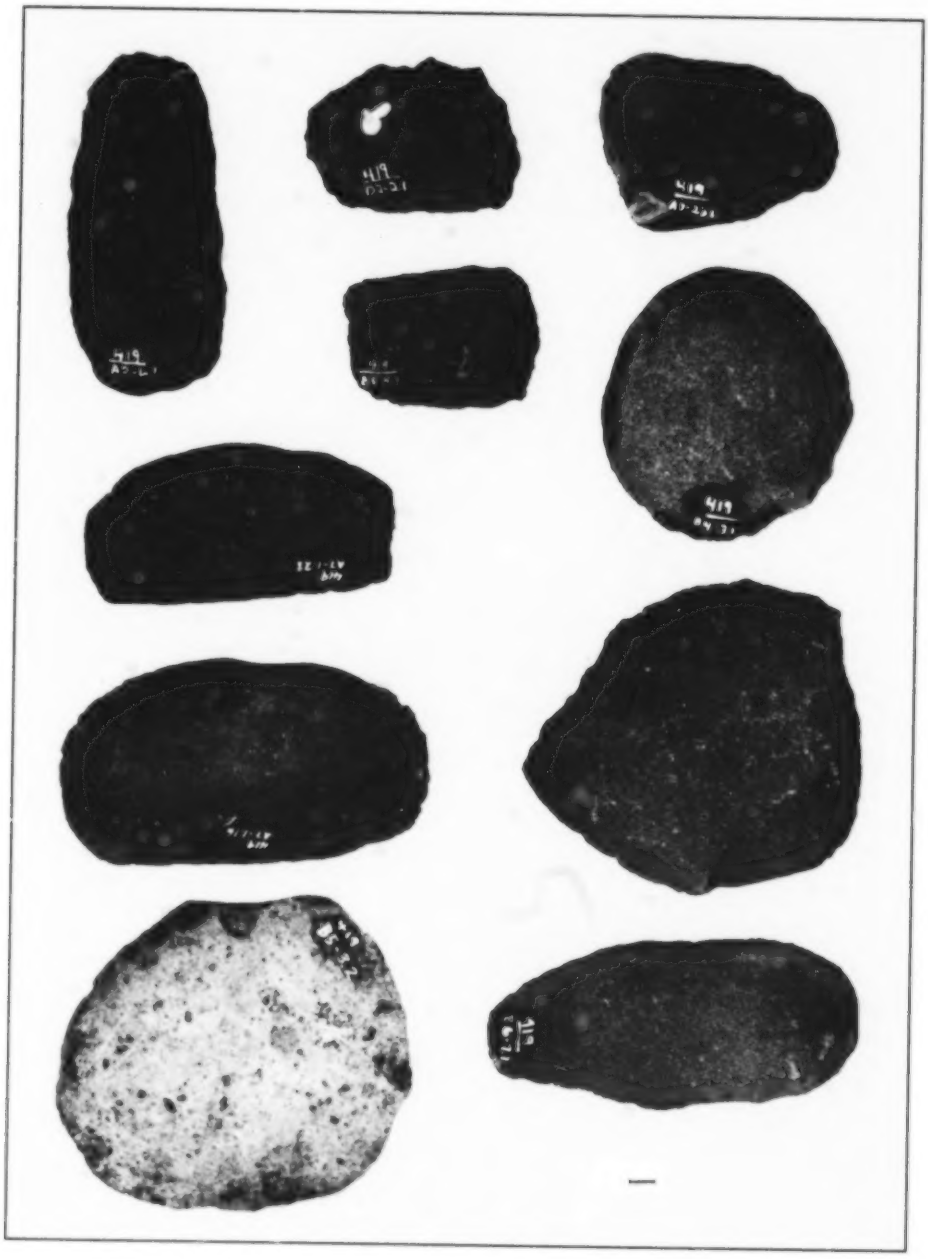


PLATE 16. BOULDER FLAKES

PLATE 17. BOULDER FLAKES (COBBLE SPALLS)
The reverse side of the specimens shown in Plate 16.
The ventral surface of the spall is shown.

a	A2-6.1	f	B4-3.1
b	D2-2.1	g	-1.16
c	A7-2.??	h	D1-3.1
d	B5-4.3	i	B5-3.2
e	A7-1.28	j	B6-7.1

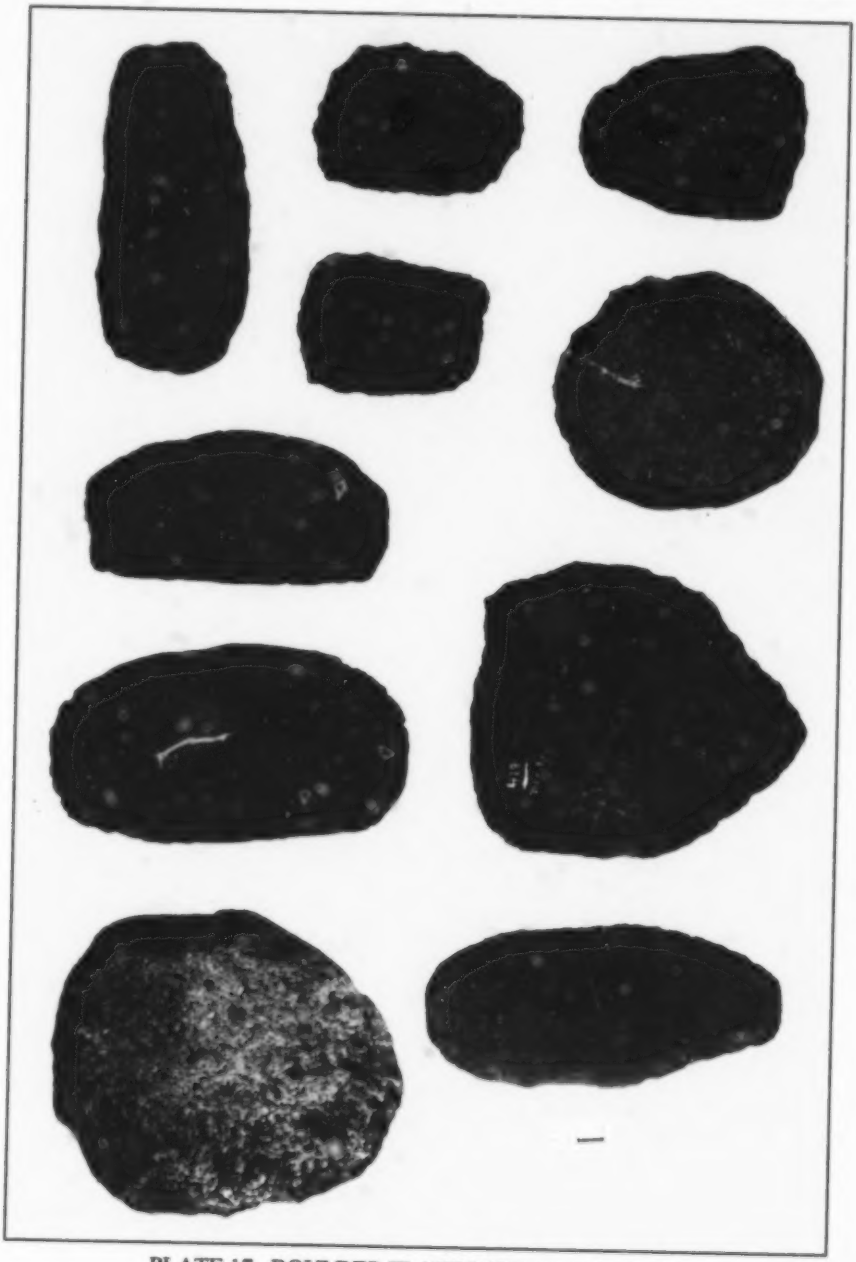
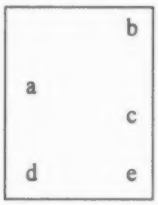


PLATE 17. BOULDER FLAKES (COBBLE SPALLS)

PLATE 18. STONE LAMPS

a B5-1
b A11-1.4
c B5-5.1
d B6-1
e A6-1.2

The size of these artifacts is given in Table 10.



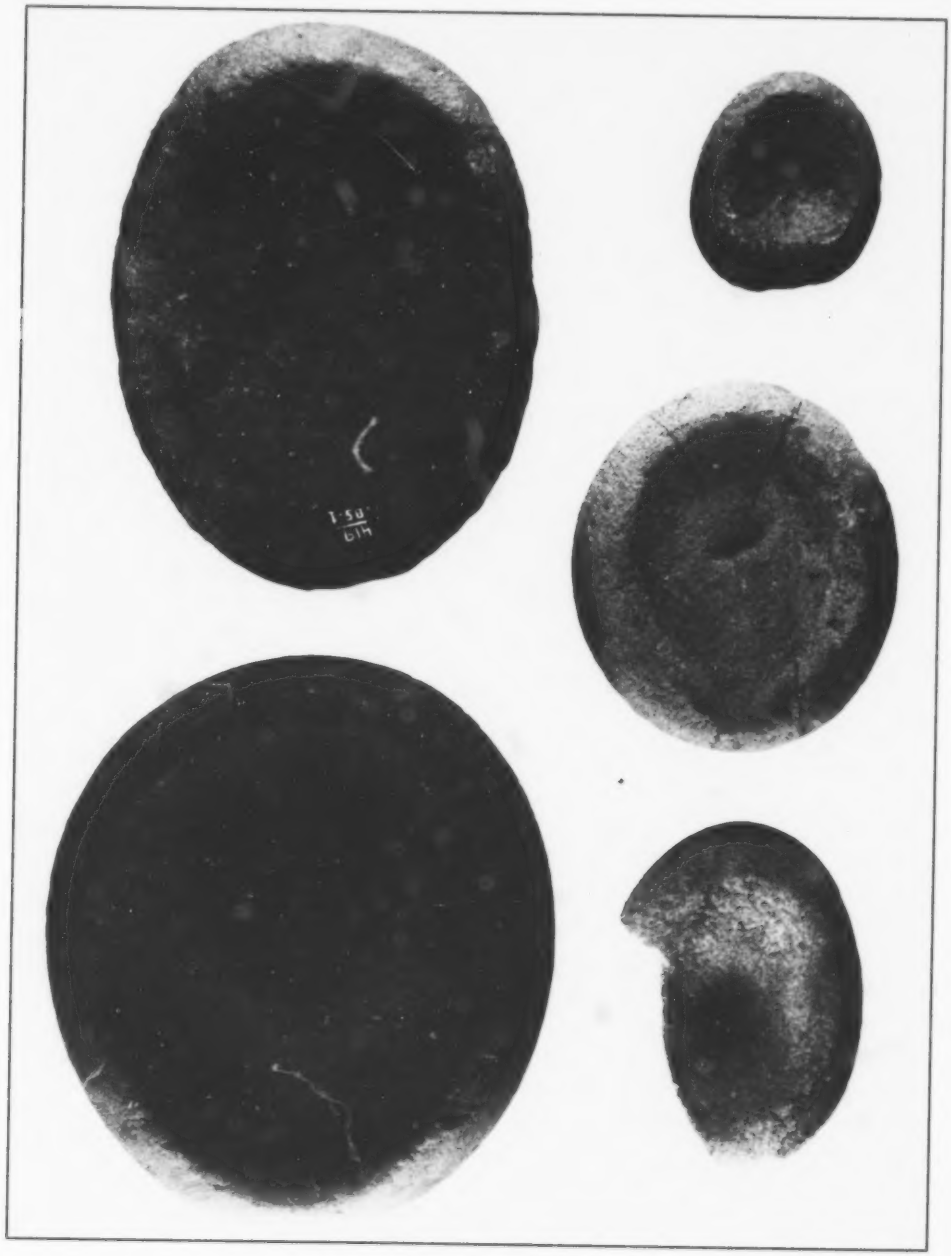


PLATE 18. STONE LAMPS

The Early Kachemak Phase on Kodiak Island at Old Kiavak

Donald W. Clark

This site report describes excavations from 1963 on Kodiak Island, Alaska, and defines an early local phase of the Kachemak tradition called the Old Kiavak phase. Comparisons with other Early Kachemak components show a considerable variation within the tradition. The seven millennia of cultural continuity accorded to Kodiak history and prehistory have an important bearing on the past of the northern North Pacific region as well as on Eskimo origins.

About the Author

Donald W. Clark has been a curator of archaeology at the Canadian Museum of Civilization since 1968. A graduate of the University of Alaska in Fairbanks, he received his Ph.D. from the University of Wisconsin-Madison. His fieldwork has ranged from Kodiak Island in the Gulf of Alaska, to the Koyukuk River in Northwestern Alaska, and across the Yukon to Great Bear Lake in the District of Mackenzie.

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